DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R8–ES–2013–0072; Docket No. FWS–R8–ES–2013–0042; 4500030113; 4500030114]

RIN 1018–AY10; RIN 1018–AZ70

Endangered and Threatened Wildlife and Plants; Withdrawal of the Proposed Rule To List the Bi-State Distinct Population Segment of Greater Sage-Grouse and Designate Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule; withdrawal.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), withdraw the proposed rule to list the bi-State distinct population segment (DPS) of greater sage-grouse (*Centrocercus urophasianus*) in California and Nevada as threatened under the Endangered Species Act of 1973, as amended (Act), as well as the proposed rules under section 4(d) of the Act and to designate critical habitat for the bi-State DPS of greater sage-grouse. These withdrawals are based on our conclusion that the threats to the DPS as identified in the proposed listing rule no longer are as significant as believed at the time of publication of the proposed rule. We find the best scientific and commercial data available indicate that the threats to the DPS and its habitat, given current and future conservation efforts, are reduced below the statutory definition of threatened or endangered. Therefore, we are withdrawing our proposal to list the bi-State DPS of greater sage-grouse as threatened with critical habitat.

DATES: The October 28, 2013, proposed rule (78 FR 64358) to list the bi-State DPS of greater sage-grouse as a threatened species and the October 28, 2013, proposed rule (78 FR 64328) to designate critical habitat for the bi-State DPS of greater sage-grouse are withdrawn as of (INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER).

ADDRESSES: The withdrawal of our proposed rule, comments, and supplementary documents are available on the Internet at *http://www.regulations.gov* at Docket Nos. FWS–R8–ES–2013–0072 and FWS–R8–ES–2013–0042. Comments and materials received, as well as supporting documentation used in the preparation of this withdrawal, are also available for public inspection, by appointment, during normal business hours at:

U.S. Fish and Wildlife Service, Reno Fish and Wildlife Office, 1340 Financial Boulevard, Suite 234, Reno, NV 89502; telephone 775–861–6300; or facsimile 775–861–6301.

FOR FURTHER INFORMATION CONTACT: Edward D. Koch, Field Supervisor, Reno Fish and Wildlife Office (see **ADDRESSES**). If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish this document. Under the Endangered Species Act, a species may warrant protection through listing if it is endangered or threatened throughout all or a significant portion of its range. Listing a species as an endangered or threatened species can only be completed by issuing a rule. We issued a proposed rule to list a distinct population segment (DPS) of greater sage-grouse in California and Nevada (known as the bi-State DPS) in 2013. However, this document withdraws that proposed rule because we now determine that threats identified in the proposed rule have been reduced such that listing is not necessary for this DPS. Accordingly, we also withdraw the proposed rule under section 4(d) of the Act and proposed critical habitat designation.

The basis for our action. Under the Endangered Species Act, we can determine that a species is an endangered or threatened species based on any of five factors: (A) The

present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We now determine that threats have been reduced such that listing is not necessary for this DPS.

Peer review and public comment. We sought comments from independent specialists to ensure that our consideration of the status of the species is based on scientifically sound data, assumptions, and analyses. We invited these peer reviewers to comment on our listing proposal. We also considered all comments and information received during the comment periods. Public comments and peer reviewer comments are addressed at the end of this **Federal Register** document.

Acronyms and Abbreviations Used in This Document

We use many acronyms and abbreviations throughout this document. To assist the reader, we provide a list of these here for easy reference:

Act = Endangered Species Act of 1973, as amended

BLM = Bureau of Land Management

BSAP = Bi-State Action Plan

CDFG = California Department of Fish and Game (see below)

CDFW = California Department of Fish and Wildlife (formerly CDFG)

CFR = Code of Federal Regulations

COT = Conservation Objectives Team

CPT = Conservation Planning Tool

DPS = Bi-State Distinct Population Segment of the Greater Sage-Grouse

EOC = Executive Oversight Committee

FR = Federal Register

GIS = Geographic Information System

GPS = Global Positioning System

LADWP = Los Angeles Department of Water and Power

LAWG = Local Area Working Group

LRMP = Land Resource Management Plan

MDL = Multi-District Litigation

NDOW = Nevada Department of Wildlife

NRCS = Natural Resources Conservation Service

OHV = Off-highway Vehicle

PECE = Policy for Evaluation of Conservation Efforts When Making Listing Decisions

PMU = Population Management Unit

RHA = Rangeland Health Assessment

RMP = Resource Management Plan

RSF = Resource Selection Function

Service = U.S. Fish and Wildlife Service

TAC = Technical Advisory Committee

USDA = U.S. Department of Agriculture

USDI = U.S. Department of the Interior

USFS = U.S. Forest Service

USGS = U.S. Geological Survey

WNv = West Nile Virus

Previous Federal Actions

Please refer to the proposed listing rule for the bi-State DPS (78 FR 64358; October 28, 2013) of greater sage-grouse for a detailed description of the Federal actions concerning this DPS that occurred prior to publication of the proposed listing rule. We concurrently published a proposed rule to designate critical habitat for the bi-State DPS of greater sage-grouse (78 FR 64328; October 28, 2013). We received requests to extend the public comment periods on the rules beyond the December 27, 2013, due date. In order to ensure that the public had an adequate opportunity to review and comment on our proposed rules, we extended the comment periods for an additional 45 days to February 10, 2014 (78 FR 77087; December 20, 2013).

On April 8, 2014, we reopened the comment period on our October 28, 2013, proposed rule to list the bi-State DPS and the proposed critical habitat rule (79 FR 19314). We also announced two public hearings: (1) April 29, 2014, in Minden, Nevada; and (2) April 30, 2014, in Bishop, California. These meetings were subsequently cancelled for unrelated reasons. On May 9, 2014, we published a notice announcing the rescheduled hearings to take place on May 28, 2014, and May 29, 2014,

respectively (79 FR 26684). The April 8, 2014, notice also announced a 6-month extension of the final determination of whether or not to list the bi-State DPS as a threatened species, which would automatically delay any decision regarding critical habitat for the bi-State DPS. The comment period was reopened (until June 9, 2014), and our determination on the final listing action was delayed based on substantial disagreement regarding the sufficiency or accuracy of the available data relevant to the proposed listing, making it necessary to solicit additional information. Thus, we announced that we would publish a listing determination on or before April 28, 2015.

On June 3, 2014, we announced an extension of the comment period on the proposed critical habitat rule (79 FR 31901), the availability of a draft economic analysis of the proposed designation of critical habitat for the bi-State DPS, and an amended required determinations section of the proposed critical habitat rule (available on the Internet at *http://www.regulations.gov* at Docket No. FWS–R8–ES–2013–0042).

On August 5, 2014, we provided an additional comment period on our October 28, 2013, proposed rule to list the bi-State DPS (79 FR 45420) based on new information received regarding population trends and recent State and Federal agency funding and staffing commitments for various conservation efforts associated with the Bi-State Action Plan (BSAP; Bi-State Technical Advisory Committee (TAC) 2012, entire). The comment period closed on September 4, 2014.

Background

In our 12-month finding on petitions to list three entities of sage-grouse (75 FR 13910; March 23, 2010), we found that the bi-State population of greater sage-grouse in California and Nevada meets our criteria as a DPS of the greater sage-grouse under Service policy (61 FR 4722; February 7, 1996). We reaffirmed this finding in the proposed listing rule and do so again here in this document. This determination was based principally on genetic information (Benedict *et al.* 2003, p. 308; Oyler–McCance *et al.* 2005, p. 1,307), where the DPS was found to be both markedly separated and significant to the remainder of the greater sage-grouse taxon. The bi-State DPS defines the far southwestern limit of the species' range along the border of eastern California and western Nevada (Stiver *et al*. 2006, pp. 1–11; 71 FR 76058).

Although the bi-State DPS is a genetically unique and markedly separate population from the rest of the greater sage-grouse's range, the DPS has similar life-history and habitat requirements. In the proposed rule and this document, we use information specific to the bi-State DPS where available but still apply scientific management principles for greater sage-grouse that are relevant to the bi-State DPS's management needs and strategies, which is a practice followed by the wildlife and land management agencies that have responsibility for management of both the DPS and its habitat.

A detailed discussion of the bi-State DPS's description, taxonomy, habitat (sagebrush ecosystem), seasonal habitat selection, life-history characteristics, home

range, life expectancy and survival rates, historical and current range distribution, population estimates and lek (sage-grouse breeding complex) counts, population trends, and land ownership information is available in the Species Report (Service 2015a, entire). A team of Service biologists prepared this status review for the bi-State DPS. The team included biologists from the Service's Reno Fish and Wildlife Office, Pacific Southwest Regional Office, Mountain-Prairie Regional Office, and national Headquarters Office. The Species Report represents a compilation of the best scientific and commercial data available concerning the status of the bi-State DPS, including the past, present, and future threats to this DPS. The Species Report and other materials relating to this final agency action can be found at *http://www.regulations.gov* under Docket No. FWS–R8–ES–2013–0072.

Summary of Changes from the Proposed Rule

Based upon our review of the public comments, Federal and State agency comments, peer review comments, issues addressed at the public hearings, and any new relevant information that became available since the publication of the proposal, we reevaluated our proposed listing rule and made changes as appropriate. Other than minor clarifications and incorporation of additional information on the species' biology and populations, this determination differs from the proposal in the following ways:

(1) Based on our analyses of the potential threats to the species, and our consideration of partially completed, ongoing and future conservation efforts (as outlined

in the **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section of this document), we have determined that the bi-State DPS should not be listed as a threatened species. Specifically, we have determined that conservation efforts (as outlined in the BSAP, Agency commitment letters, and our detailed PECE analysis (all of which are available at *http://www.regulations.gov* (Docket No. FWS–R8–ES–2013–0072)), as well as the TAC comprehensive project database) will continue to be implemented because (to date) we have a documented track record of active participation and implementation by the signatory agencies, and commitments to continue implementation into the future. Conservation measures, such as (but not limited to) pinyon-juniper removal, establishment of conservation easements for critical brood-rearing habitat, cheatgrass removal, permanent and seasonal closure of roads near leks, removal and marking of fencing, and restoration of riparian/meadow habitat have been occurring over the past decade, are currently occurring, and have been prioritized and placed on the agencies' implementation schedules for future implementation. Agencies have committed to remain participants in the BSAP and continue conservation of the DPS and its habitat. Additionally, the BSAP has sufficient methods for determining the type and location of the most beneficial conservation actions to be implemented, including continued development of new population and threats information in the future that will guide conservation efforts. As a result of these actions, this document withdraws the proposed rule as published on October 28, 2013 (78 FR 64358).

(2) The addition of the **Ongoing and Future Conservation Efforts** section, which includes some information presented in the **Available Conservation Measures**

section of the proposed listing rule and the **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section following the **Summary of Factors Affecting the Species** section, below.

(3) The addition of a discussion under the **Small Population Size and Population Structure** section that synthesizes information to evaluate resiliency, redundancy, and representation as they relate to the bi-State DPS.

(4) New information was received following publication of the proposed listing rule. Some of the information was in response to our request for scientific peer review of the proposed listing rule, while other information was a result of new literature now available, or updated regulations. We incorporated all new information into the Species Report (Service 2015a, entire), which is available on the Internet at *www.regulations.gov* (Docket No. FWS–R8–ES–2013–0072), as well as within this **Federal Register** document where appropriate. New information includes (but is not limited to):

- A variety of biological or habitat clarifications, such as hen movement distances, nesting success, and invasive plant species influence on sagebrush-habitat dynamics.
- A recent trend analysis conducted by Coates *et al.* (2014, entire) examined six populations (i.e., Pine Nut, Desert Creek, Fales, Bodie Hills, Parker Meadows, and Long Valley) over a 10-year period between 2003 and 2012. The results suggest that four of the six populations (i.e., Pine Nut, Desert Creek, Bodie Hills, and Long Valley) are stable. Population

growth was variable among the populations, and results for the Pine Nut population are not considered to be reliable due to the small sample size associated with a single active lek (see **Species Information** above).

- Two genetic evaluations, one of which concluded there are between three and four unique genetic clusters within the bi-State area (Oyler-McCance *et al.* (2014, p. 8), and a second that concluded there were five unique genetic clusters (Tebbenkamp 2014, p. 18). Tebbenkamp (2014) did not evaluate the Pine Nut population; thus, six populations may have been identified by Tebbenkamp (2014) had the Pine Nut population data been available.

Species Information

As stated above, the bi-State DPS of greater sage-grouse is genetically unique and markedly separate from the rest of the species' range. The species as a whole is long-lived, reliant on sagebrush, highly traditional in areas of seasonal habitat use, and particularly susceptible to habitat fragmentation and alterations in its environment (see the *Seasonal Habitat Selection and Life History Characteristics* section of the Species Report (Service 2015a, pp. 11–15)). Sage-grouse annually exploit numerous habitat types in the sagebrush ecosystem across broad landscapes to successfully complete their life cycle, thus spanning ecological and political boundaries. Populations are slow-growing due to low reproductive rates (Schroeder *et al.* 1999 pp. 11, 14; Connelly *et al.* 2000a, pp. 969–970), and they exhibit natural, cyclical variability in abundance (see

Current Range/Distribution and Population Estimates/Annual Lek Counts section of the Species Report (Service 2015a, pp. 17–31)).

For the purposes of this document, we discuss the bi-State DPS populations, threats to those populations, and associated management needs or conservation actions as they relate to population management units (PMUs). Six PMUs were established in 2001 as management tools for defining and monitoring sage-grouse distribution in the bi-State area (Sage-Grouse Conservation Planning Team 2001, p. 31). The PMU boundaries are based on aggregations of leks, known seasonal habitats, and telemetry data, which represent generalized subpopulations or local breeding complexes. The six PMUs include: Pine Nut, Desert Creek-Fales, Bodie, Mount Grant, South Mono, and White Mountains PMUs. These six PMUs represent a total of three to six demographically independent populations with a combined total of approximately 43 active leks (see Table 1 below; Service 2015a, pp. 17–31). Leks are considered either active (e.g., two or more strutting males during at least 2 years in a 5-year period), inactive (e.g., surveyed three or more times during one breeding season with no birds detected and no sign (e.g., droppings) observed), historical (e.g., no strutting activity for 20 years and have been checked according to State protocol at least intermittently), or unknown/pending (e.g., sign was observed, and one or no strutting males observed, or a lek that had activity the prior year but was not surveyed or surveyed under unsuitable conditions during the current year and reported one or no strutting males).

Table 1— Bi-State DPS Population Management Units (PMUs), PMU size, estimated suitable sage-grouse habitat, estimated range in population size, number of active leks, and reported range in total males counted on all leks within each PMU.

PMU	Total Size hectares (acres)*	Estimated Suitable Habitat hectares (acres)**	Estimated Population Size range (2004–2014)***	Current Number of Active Leks***†	Lek count (number of males) range (2004–2014)***
Pine Nut	232,440 (574,373)	77,848 (192,367)	<100–608	1	0–38
Desert Creek-Fales	229,858 (567,992)	105,281 (260,155)	638–2,061	10	78–220
Mount Grant	282,907 (699,079)	45,786 (113,139)	171–3,058	6	12–215
Bodie	141,490 (349,630)	105,698 (261,187)	640–2,466	12	136–524
South Mono	234,508 (579,483)	138,123 (341,311)	965–2,005	11	205–426
White Mountains	709,768 (1,753,875)	53,452 (132,083)	Data not available	3+	5–14
Total (all PMUs combined)	1,830,972 (4,524,432)	526,188 (1,300,238)	2,497–9,828	43	427–1,404

* Bi-State Local Planning Group (2004, pp. 11, 32, 63, 102, 127, 153).
** Bi-State TAC (2012, unpublished data); Bureau of Land Management (BLM 2014a, unpublished data).
*** California Department of Wildlife (CDFW 2014a, unpublished data), Nevada Department of Wildlife (NDOW 2014a, unpublished data).
† Active—two or more strutting males during at least 2 years in a 5-year period.
NOTE—Area values for "Total Size" and "Estimated Suitable Habitat" may not sum due to rounding.
NOTE—Estimated population and lek count totals are not a sum of the PMU cells. Totals represent minimum and maximum estimates between 2004 and 2014. Minimum numbers were documented in 2008 and maximum in 2012.

Each sage-grouse population in the bi-State area is relatively small, as is the entire DPS on average, which is estimated at 2,497 to 9,828 individuals (CDFW 2014a,

unpublished data; NDOW 2014a, unpublished data). Based on the maximum number of males counted on leks, the two largest populations exist in the Bodie (Bodie Hills population) and South Mono (Long Valley population) PMUs. The remaining PMUs contain smaller populations. Although population estimates derived from lek surveys (and presented in Table 1, above) suggest the Mount Grant and Desert Creek-Fales PMUs rival populations in the Bodie and South Mono PMUs, we consider population estimates for the two former PMUs to be inflated due to differences in survey method (helicopter versus on-the-ground) as well as differences in the specific estimator formula used by the NDOW versus the CDFW.

In 2014, the U.S. Geological Survey (USGS) completed an analysis of population trends in the bi-State area between 2003 to 2012 (Coates *et al*. 2014, entire). This analysis, termed an Integrated Population Model, integrates a variety of data such as lek counts and vital rate information to inform an estimate of population growth within the DPS. This analysis evaluated several populations in the bi-State area including the Pine Nut (Pine Nut PMU), Fales (California portion of the Desert Creek–Fales PMU), Desert Creek (Nevada Portion of the Desert Creek–Fales PMU), Bodie Hills (Bodie PMU), Parker Meadows (South Mono PMU), and Long Valley (South Mono PMU) populations. It did not evaluate the Mount Grant (Mount Grant PMU) or White Mountains (White Mountains PMU) populations due to data limitations. Results suggest the evaluated populations, in their entirety, are stable (both growing and declining) between 2003 and 2012 (Coates *et al.* 2014, p. 19). However, the trend in population growth was variable

among populations (Coates *et al.* 2014, pp. 14–15). Details pertaining to specific population and PMUs are provided below.

Two recent and independent genetic evaluations have been conducted in the bi-State area. Oyler-McCance *et al*. (2014, p. 8) concluded there are between three and four unique genetic clusters within the bi-State area, while Tebbenkamp (2014, p. 18) concluded there were five unique genetic clusters. In addition, Tebbenkamp (2014, p. 12) did not evaluate the Pine Nut population, which Oyler-McCance *et al*. (2014, p. 8) found to be unique. Thus, presumably Tebbenkamp (2014, entire) would have differentiated six populations had these data been available. Based on this information, we presume that there are likely three to six populations or groups of birds in the bi-State area that largely operate demographically independent of one another.

Overall, the remaining habitat is reduced in quality from what we currently consider high-quality habitat for the bi-State DPS (see various Impact Analysis discussions in the Species Report including, but not limited to, the *Infrastructure, Nonnative, Invasive and Native Increasing Plants*, and *Wildfires and Altered Fire Regime* sections (Service 2015a, pp. 45–91)) and, thereby, sage-grouse carrying capacity likely also is reduced. Additionally, the best available data indicate that reductions in sage-grouse abundance proportionally exceed habitat loss (in other words, because sage-grouse habitat abundance has been reduced on the order of 50 percent over the past 150 years, the expected sage-grouse population numbers (or abundance) are reduced by more than 50 percent over the same time period). The residual limited connectivity of

populations and habitats within and among the PMUs also continues to slowly erode (Service 2015a, pp. 16–33, 45,–52, 57, 58, 61, 63–65, 67, 69, 82–84, 86, 121–122, 124, 143, 144–150). However, as discussed in the **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section (below), conservation efforts are effectively reducing the risk of further habitat loss and helping maintain connectivity.

At the time of the proposed listing rule, we stated that declining bi-State DPS population trends were continuing for the Pine Nut, Desert Creek-Fales, and Mount Grant PMUs, with an unknown trend for the White Mountains PMU (Service 2013a, pp. 21–29). However, a more recent trend analysis conducted by Coates *et al.* (2014, p. 19) examining six populations (i.e., Pine Nut, Desert Creek, Fales, Bodie Hills, Parker Meadows, and Long Valley) over a 10-year period between 2003 to 2012 estimated these populations to be stable (not growing or declining) (see *Current Range/Distribution and Population Estimates/Annual Lek Counts* section of the Species Report). Specifically, this analysis characterized population growth rates as positive for four of the six populations analyzed (i.e., Pine Nut, Desert Creek, Bodie Hills, and Long Valley), and negative for the remaining two populations (i.e., Fales, Parker Meadows). We note, however, that although this model projected a positive growth rate for the Pine Nut population, the single active lek used to partially inform the Pine Nut PMU model for this trend analysis had zero males strutting in 2013 and a single male in 2014. Therefore, we interpret these model results, particularly for this population, with caution.

The Bodie and South Mono PMUs form the central core of the bi-State DPS. The Bodie Hills and Long Valley populations within these two PMUs are the largest sage-grouse populations in the bi-State area. These PMUs encompass between approximately 45 and 64 percent of existing bi-State DPS individuals (Service 2015a, p. 20). These PMUs are relatively stable at present (estimates range from approximately 640 to 2,466 individuals in the Bodie PMU and 965 to 2,005 individuals in the South Mono PMU (CDFW 2014a, unpublished data; NDOW 2014a, unpublished data; Coates *et al.* 2014, p. 15)), and the scope and severity of known impacts are comparatively less than in other PMUs. These PMUs currently are relatively stable with overall fewer impacts as compared to the other four PMUs, despite having experienced prior habitat losses, population declines, and internal habitat fragmentation. Significant connectivity between these two PMUs is currently lacking (Service 2015a, pp. 121–122, 143), and like many areas in the Great Basin both PMUs (as well as the other four PMUs) are vulnerable to the effects of *Bromus tectorum* cheatgrass invasion (Service 2015a, pp. 79–81) and wildfire impacts (Service 2015a, pp. 86–91).

Together, the Bodie and South Mono PMUs represent less than 20 percent of the historical range for the bi-State DPS. Historically, the DPS occurred throughout most of Mono, eastern Alpine, and northern Inyo Counties, California (Hall *et al.* 2008, p. 97), and portions of Carson City, Douglas, Esmeralda, Lyon, and Mineral Counties, Nevada (Gullion and Christensen 1957, pp. 131–132; Espinosa 2006, pers. comm.). While the Bodie PMU is expected to fall below 500 breeding adults within the next 30 years (Garton *et al.* 2011, p. 310), both the Bodie and South Mono PMUs (which harbor the

two largest populations) are projected by sage-grouse experts to have moderate to high probabilities of persistence into the future (Aldridge *et al*. 2008, entire; Wisdom *et al*. 2011, entire). The Bodie PMU has fluctuated with positive and negative population growth over the past 40 years with no discernible long-term trend (Service 2013a, pp. 24–26). The long-term population trend for the South Mono PMU has been stable (Service 2015a, pp. 26–27). As with the Bodie PMU, some sage-grouse experts estimate an 80 percent chance of the population declining to fewer than 500 breeding adults in 30 years (Garton *et al*. 2011, p. 310). Both the Bodie and South Mono PMU populations have fallen below 500 breeding individuals in the past and then have returned to higher numbers. Thus, while sage-grouse experts predict these populations could again fall below 500 breeding individuals in the future, we conclude it is likely that these populations will continue to fluctuate in size but persist, particularly given the conservation efforts occurring currently and into the future as a result of implementation and effectiveness of the BSAP (see Policy for Evaluation of Conservation Efforts When Makin Listing Decisions (PECE), below).

Fluctuations in population size in the relatively small Pine Nut, Fales, and Parker Meadows populations (within the Pine Nut, Desert Creek-Fales, and south Mono PMUs) could result in extirpation of one or more of these populations, and thereby reduce population redundancy within the DPS. Historical extirpations outside the existing boundaries of the six PMUs present a similar pattern of lost peripheral populations (see *Historical Range/Distribution and Population Estimates* section of the Species Report) (Service 2015a, pp. 16–17)). Two range-wide assessments investigating patterns of sage-

grouse population persistence confirm that PMUs on the northern and southern extents of the bi-State DPS (i.e., Pine Nut, Desert Creek-Fales, and White Mountains PMUs) are similar to extirpated sites elsewhere within the range of greater sage-grouse, while the central PMUs (i.e., South Mono, Bodie, and Mount Grant PMUs) are similar to extant sites (Aldridge *et al*. 2008, entire; Wisdom *et al*. 2011, entire).

In summary, we anticipate the greatest risk of PMU loss for three of the six PMUs in the bi-State DPS (i.e., Pine Nut, Mount Grant, and White Mountains PMUs) as compared to the PMUs that harbor more sage-grouse individuals (i.e., Desert Creek-Fales PMU) and the central core (or largest) populations (i.e., Bodie and South Mono PMUs).

Following are brief accounts of each PMU. Primary threats are introduced in these summaries and described in more detail in the **Summary of Factors Affecting the Species** section below, and fully evaluated and described in the **Impact Analysis** section of the Species Report (Service 2015a, pp. 45–129).

(1) The Pine Nut PMU has the fewest sage-grouse of all bi-State DPS PMUs (i.e., one population ranging in size from less than 100 to 608 birds based on data collected between 2004 and 2014 (Table 1, above)). Telemetry research in the Pine Nut Mountains suggests the potential for additional undocumented leks in the south-central portion of the PMU (USGS 2013a, p. 2). Most recently in 2014, eight males were documented strutting on Bald Mountain in close proximity to the inactive lek site in the southern extent of the Pine Nut Mountains (USGS 2014a, p. 1). A recent 10-year trend

analysis between 2003 and 2012 suggests the population in the Pine Nut PMU has been stable (Coates *et al*. 2014, p. 14). However, in 2013, no birds were documented at the Mill Canyon Dry Lake lek and in 2014 one male was seen strutting, even though the lek sites were surveyed intensely in both years (USGS 2013b, p. 25; USGS 2014b, p. 1).

Overall, this population represents approximately 6 percent of the DPS. The population in the Pine Nut PMU has some level of connectivity with the Desert Creek-Fales PMU and potentially also with the Bodie and Mount Grant PMUs. Urbanization, grazing management, wildfire, invasive species, infrastructure, and mineral development are affecting this population, and the scope and severity of most of these impacts are likely to increase into the future based on the proximity of the PMU to expanding urban areas, agricultural operations, road networks, and power lines; altered fire regimes; new mineral entry proposals; and increasing recreational off-highway vehicle (OHV) use on public lands. Because of the current small population size and the ongoing and potential future magnitude of habitat impacts if left unchecked, the sage-grouse population in the Pine Nut PMU (i.e., the northernmost population within the range of the bi-State DPS) is at a greater risk of extirpation than populations in other PMUs within the bi-State area.

Threats to the Pine Nut PMU and risk of extirpation are reduced as a result of effective ongoing and future conservation efforts associated with the BSAP that are occurring within this PMU, such as (but not limited to): restoring habitat (e.g., reducing pinyon-juniper encroachment, reducing the spread of cheatgrass, improving brood-rearing habitat) reducing wild horse grazing impacts, reducing infrastructure impacts

(e.g., temporary or permanent road closures, fencing maintenance or marking), and potentially conducting future translocation of sage-grouse from stable populations. Discussion of the various conservation efforts that are partially completed and planned for the future can be found in our detailed PECE analysis (available at *www.regulations.gov*, Docket No. FWS–R8–ES–2013–0072) and the **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section of this document.

(2) The Desert Creek-Fales PMU straddles the Nevada-California border and contains two populations, one in each State. The two populations (including the Desert Creek breeding complex and the Fales breeding complex) have ranged in size from approximately 638 to 2,061 birds between 2004 and 2014 (Table 1, above). A recent analysis suggests population growth was slightly positive in the Desert Creek breeding complex between 2003 and 2012 (Coates *et. al*. 2014a, p. 14). The Fales breeding complex has remained small since 1981, and a recent analysis suggests population growth was slightly negative between 2003 and 2012 (Coates *et. al*. 2014a, p. 14).

The populations in the Desert Creek-Fales PMU have some level of connectivity with the Pine Nut PMU and potentially also with the Bodie and Mount Grant PMUs. The most significant impacts in this PMU are wildfire, invasive species (specifically conifer encroachment), infrastructure, and urbanization. Private-land acquisitions in California and conifer removal in Nevada and California have mitigated some of the impacts within this PMU. However, urbanization and woodland succession remain a concern based on

the lack of permanent protection for important brood-rearing (summer) habitat that occurs primarily on irrigated private pasture lands and continued *Pinus monophylla* (pinyon pine) and various *Juniperus* (juniper) species encroachment that is contracting distribution of the populations and connectivity between populations. While some of these impacts are more easily alleviated than others (e.g., conifer encroachment), the existing condition would likely worsen in the future (Bi-State TAC 2012a, pp. 24–25) if conservation efforts were not conducted. However, impacts to populations within this PMU are reduced as a result of effective ongoing and future conservation efforts that are associated with the BSAP, such as (but not limited to): restoring habitat (e.g., reducing pinyon-juniper encroachment, reducing the spread of cheatgrass (which in turn is reducing the threat of wildfire), improving brood-rearing habitat, establishing conservation easements in critical brood-rearing habitat areas, improving grazing management conditions, and reducing infrastructure impacts (e.g., permanent road closures). Discussion of the various conservation efforts that are partially completed or proposed for the future can be found in our detailed PECE analysis (available at *www.regulations.gov*, Docket No. FWS–R8–ES–2013–0072) and the **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section of this document.

(3) The Mount Grant PMU contains one population, with population estimates between 2004 and 2014 ranging from approximately 171 to 3,058 birds (Table 1, above). The population in the Mount Grant PMU has some level of connectivity with the Bodie PMU and potentially also with the Desert Creek-Fales and Pine Nut PMUs. Habitat

impact sources in this PMU include woodland encroachment, renewable energy and mineral development, infrastructure, and the potential for wildfire. Woodland encroachment, mineral development, and infrastructure currently fragment habitat in this PMU and, in the future, these as well as wildfire (if it occurs) may reduce or eliminate connectivity to the sage-grouse population in the adjacent Bodie PMU. Long-term persistence of the sage-grouse population in the Mount Grant PMU is less likely than in the other PMUs that currently harbor larger populations of sage-grouse in the bi-State area without successful implementation of additional conservation measures.

Population estimates for the Mount Grant PMU (Service 2015a, Table 1) are highly uncertain due to survey methodology and inconsistencies. Thus, while the PMU appears to harbor a significant number of birds, we consider this estimate to be biased significantly high (albeit to an unknown degree), and further, it appears the PMU is experiencing negative growth (NDOW 2014a, unpublished data). Long-term persistence of the sage-grouse population in the Mount Grant PMU is uncertain, particularly if conservation efforts are not conducted. However, impacts to populations within this PMU are reduced as a result of effective ongoing and future conservation efforts that are associated with the BSAP, such as (but not limited to): restoring habitat (e.g., reducing pinyon-juniper encroachment, improving brood-rearing habitat), reducing direct and indirect potential energy development and mining impacts, establishing conservation easements in critical brood-rearing habitat areas, reducing grazing impacts through wild horse management, implementing wildfire prevention and suppression strategies, and reducing infrastructure impacts (e.g., permanent road closures). Discussion of the

various conservation efforts that are partially completed or proposed for the future can be found in our detailed PECE analysis (available at *www.regulations.gov*, Docket No. FWS–R8–ES–2013–0072) and the **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section of this document.

(4) The Bodie PMU contains one population (Bodie Hills), which is one of the two core (largest) populations for the bi-State DPS. Population estimates for this PMU between 2004 and 2014 range from 640 to 2,466 individuals (Table 1, above). This PMU typically has the highest number of active leks (i.e., 13) of all the PMUs. The population in the Bodie PMU has some level of connectivity with the Mount Grant PMU and potentially also with the Desert Creek-Fales and Pine Nut PMUs.

Woodland succession is estimated to have caused a 40 percent reduction in sagebrush habitat throughout the Bodie PMU, and encroachment into sagebrush habitat is expected to continue to some degree both from woodland edge expansion and infilling. The potential of future wildfire and subsequent habitat loss by conversion to annual grasses is of greatest concern based on the increased understory presence of cheatgrass, specifically in Wyoming big sagebrush (*Artemisia tridentata* spp. *wyomingensis*) communities within the Bodie PMU (e.g., Bodie Hills). In addition, the potential for loss (largely restricted to date) of sage-grouse habitat to exurban development (small, usually prosperous community situated beyond the suburbs of a city) on unprotected private lands in the Bodie PMU is also a concern because these lands provide summer- and winter-use areas and connectivity for sage-grouse among the Bodie, Mount Grant, and

Desert Creek-Fales PMUs. Current impacts posed by infrastructure, grazing, and mineral extraction are of minimal severity in the Bodie PMU. However, impacts to populations within this PMU are reduced as a result of effective ongoing and future conservation efforts that are associated with the BSAP, such as (but not limited to): restoring habitat (e.g., reducing pinyon-juniper encroachment, improving brood-rearing habitat, restoration of areas invaded by cheatgrass), reducing direct and indirect potential energy development and mining impacts; establishing conservation easements in critical brood-rearing habitat areas, reducing grazing impacts through wild horse management, implementing wildfire prevention and suppression strategies, and reducing infrastructure impacts (e.g., permanent road closures). Discussion of the various conservation efforts that are partially completed or proposed for the future can be found in our detailed PECE analysis (available at *www.regulations.gov*, Docket No. FWS–R8–ES–2013–0072) and the **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section of this document.

(5) The South Mono PMU contains three populations (Long Valley, Granite Mountain, and Parker Meadows). The Long Valley population is one of the two largest (core) populations for the bi-State DPS. Population estimates for this PMU between 2004 and 2014 range from 965 to 2,005 individuals (Table 1). The South Mono PMU typically has had the highest estimated population size of all the PMUs. This PMU is considered to be largely isolated from the other PMUs.

Currently, the most significant impacts in the South Mono PMU are infrastructure and recreation, with the potential for increased wildfire. An indirect impact of infrastructure to the sage-grouse population in Long Valley is predation, likely associated with the local landfill. Predation (primarily from ravens) appears to reduce sage-grouse nest success in Long Valley, but the population nevertheless appears stable. The Parker Meadows population currently has one active lek and is quite small; from 2002 to 2014, male sage-grouse counts have ranged between 3 and 17 (CDFW 2014a, *in litt*.). This population has the lowest reported genetic diversity in the bi-State area, and it is experiencing high nest failure rates due to nonviable eggs (Gardner 2009, pers. comm.), potentially indicative of genetic challenges. The Granite Mountain population consists of two leks ("Adobe" and "Gaspipe") and is also quite small. The Adobe lek averaged 11 males between 1984 and 1994 before numbers began to decline in 1995, and subsequently the site became inactive in 2001 (CDFW 2014a, *in litt*.). The Gaspipe lek averaged seven males between 1990 and 2008, and the site became inactive in 2009 (CDFW 2014a, *in litt*.). However, in 2013 and 2014 four and seven males were counted, respectively.

Impacts to populations within this PMU are reduced as a result of effective ongoing and future conservation efforts that are associated with the BSAP, such as (but not limited to): restoring habitat (e.g., reducing pinyon-juniper encroachment, improving brood-rearing habitat), reducing direct and indirect human disturbance related to recreation or activities associated with potential development, reducing predation impacts (e.g., removing a landfill), establishing conservation easements in critical brood-rearing

habitat areas, and reducing infrastructure impacts (e.g., seasonal or permanent road closures, maintenance and/or removal of fencing). Discussion of the various conservation efforts that are partially completed or proposed for the future can be found in our detailed PECE analysis (available at *www.regulations.gov*, Docket No. FWS–R8–ES–2013–0072) and the **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section of this document.

(6) The White Mountains PMU contains one population. No recent population estimate for this southernmost PMU is available, and, overall, information on population status and impacts is limited. The area is remote and difficult to access, and most data are from periodic observations rather than comprehensive surveys. The population in the White Mountains PMU is considered to be largely isolated from the other PMUs. Current impacts such as exurban development (e.g., Chiatovich Creek area (Bi-State Lek Surveillance Program 2012, p. 38)), grazing, recreation, and invasive species may be influencing portions of the population and are likely to increase in the future, but current impacts are considered minimal due to the remote locations of most known sage-grouse use areas. Potential future impacts from infrastructure (power lines, roads) and mineral developments could lead to the loss of the remote, contiguous nature of the habitat if conservation efforts were not conducted.

As stated above, while some of the impacts occurring in the six PMUs are more easily alleviated than others (e.g., conifer encroachment), the existing condition (without intervention) would likely worsen in the future (Bi-State TAC 2012a, pp. 24–25) if

conservation efforts were not conducted. As a result, significant conservation efforts that are associated with the BSAP are currently under way (partially completed) or are planned for the future that are reducing or eliminating impacts, including (but not limited to): reducing infrastructure impacts (e.g., permanent road closures), reducing human disturbance associated with urbanization, restoring habitat (e.g., reducing pinyon-juniper encroachment, improving brood-rearing habitat), and reducing grazing impacts through wild horse management. Discussion of the various conservation efforts that are partially completed or proposed for the future can be found in our detailed PECE analysis (available at *www.regulations.gov*, Docket No. FWS–R8–ES–2013–0072) and the **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section of this document.

Summary of Factors Affecting the Species

Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. Listing actions may be

warranted based on any of the above threat factors, singly or in combination. Each of these factors is discussed below.

A threats analysis for the bi-State DPS is included in the Species Report (Service 2015a, entire) associated with this document (and available at *http://www.regulations.gov* under Docket No. FWS–R8–ES–2013–0072). All potential threats of which we are aware that are acting upon the bi-State DPS currently or in the future (and consistent with the five listing factors identified above) were evaluated and addressed in the Species Report, and are summarized in the following paragraphs.

Many of the impacts to sage-grouse populations and sagebrush habitats in the bi-State DPS are present throughout the DPS's range, although they (at the time of the proposed listing and currently) affect the DPS to varying degrees. Specifically, the populations and habitat in the northern extent of the bi-State area, including the Pine Nut, Desert Creek-Fales, and Mount Grant PMUs, are now and will likely continue to be most at risk from the various threats acting upon the bi-State DPS and its habitat. Without future conservation efforts (i.e., the partially completed and future actions summarized in the **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section below), we would anticipate loss of some populations and contraction of the ranges of others in these three PMUs (see *Species Information* section above and *Bi-State DPS Population Trends* section of the Species Report (Service 2015a, pp. 31–33)), which will leave them more susceptible to extirpation from stochastic events such as wildfire, drought, and disease. We would expect (again, assuming no interventions or

increased protections) that two populations in the Bodie and South Mono PMUs (i.e., the Bodie Hills and Long Valley populations, respectively) will persist into the future (Aldridge *et al*. 2008, entire; Wisdom *et al*. 2011, entire). Significant ongoing and future conservation efforts are reducing or eliminating impacts; discussion of these conservation efforts can be found in our detailed PECE analysis (available at *www.regulations.gov*, Docket No. FWS–R8–ES–2013–0072) and the **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section of this document.

If left unchecked, the impacts that are of high current or future scope and severity within the DPS (i.e., the most significant threats overall across the range of the bi-State DPS) include those that are resulting in the present or threatened destruction, modification, or curtailment of its habitat or range, and other natural or manmade threats affecting the DPS's continued existence. These more significant threats include infrastructure (i.e., fences, power lines, and roads) (Factors A and E); urbanization and human disturbance (Factors A, B, C, and E); the spread of nonnative, invasive and native plants (e.g., pinyon-juniper encroachment, cheatgrass) (Factors A and E); wildfires and altered fire regime (Factors A and E); and the small size of the DPS (both the number of individual populations and their size), which generally makes such species more susceptible to extirpation (Factor E). These impacts, along with those that are currently considered minor, have the potential to act together to negatively affect the bi-State DPS. However, completed, ongoing and planned conservation actions have reduced the scope and severity of these impacts. Following a thorough analysis of the best available

information, we determined that hunting, scientific and educational uses, pesticides and herbicides, and contaminants have negligible impacts to the bi-State DPS at this time.

The bi-State DPS is experiencing multiple impacts to individual populations and sagebrush habitats that are ongoing (and expected to continue into the future) in many areas throughout the DPS's range. Individually, each of these impacts is unlikely to affect persistence across the entire bi-State DPS, but each may act independently to affect persistence of individual populations. However, we note that the level of impact these threats may have on the DPS's habitat are lessened overall today as compared to the time of the proposed listing rule due to the continued implementation of the BSAP. We believe the future impacts of these threats are significantly reduced due to the expected implementation and effectiveness of the partially completed and future conservation efforts associated with the BSAP (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** below).

Additional, less significant impacts to the bi-State DPS or its habitat may be occurring, but not everywhere across the DPS at this time (such as, but not limited to, grazing and rangeland management; mining; renewable energy development; or West Nile virus (WNv) infections). We do not consider these impacts to have serious consequences for the bi-State DPS or its habitat. Moreover, these less-significant impacts to the bi-State DPS are reduced overall today and into the future as compared to the time of the proposed listing rule due the continued implementation of the BSAP, and the expected implementation and effectiveness of the partially completed and future

conservation efforts associated with the BSAP (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** below).

Following are summary evaluations of 16 potential threats to the bi-State DPS, including: Invasive nonnative and native plants (Factor A and E); wildfires and altered fire regime (Factors A and E); infrastructure, including roads, power lines, fences, communication towers, and landfills (Factors A and E); grazing and rangeland management (Factors A, C, and E); small population size and population structure (Factor E); urbanization and habitat conversion (Factor A); mining (Factors A and E); renewable energy development and associated infrastructure (Factors A and E); disease or predation (Factor C); climate change, including drought (Factors A and E); recreation (Factors A and E); overutilization (including commercial and recreational hunting) (Factor B); scientific and educational uses (Factor B); pesticides and herbicides (Factor E); and contaminants (Factor E). The inadequacy of existing regulatory mechanisms was also evaluated (Factor D). Please see the Species Report (Service 2015a, pp. 45–142) for a full evaluation, including but not limited to, an evaluation of the scope, severity, and timing of each potential threat (including many literature citations).

Invasive Nonnative and Native Plants

Nonnative, invasive plants negatively impact sagebrush ecosystems by altering plant community structure and composition, productivity, nutrient cycling, and hydrology (Vitousek 1990, p. 7) (Factor A), and may cause declines in native plant populations

through competitive exclusion and niche displacement, among other mechanisms (Mooney and Cleland 2001, p. 5446) (Factor E). They can create long-term changes in ecosystem processes (Factor A), such as fire cycles (see *Wildfires and Altered Fire Regime* section below, and in the Species Report (Service 2015a, pp. 84–91)) and other disturbance regimes that persist even after an invasive plant is removed (Zouhar *et al.* 2008, p. 33). A variety of nonnative annuals and perennials are invasive to sagebrush ecosystems (Connelly *et al.* 2004, pp. 7-107 to 7-108; Zouhar *et al.* 2008, p. 144). Cheatgrass is considered most invasive in Wyoming sagebrush communities (which is a subspecies of sagebrush that occurs in the bi-State area), while medusahead rye (*Taeniatherum caput-medusae* (L.) Nevski) fills a similar niche in more mesic communities with heavier clay soils (Connelly *et al.* 2004, p. 5-9).

Some native tree species are also invading sagebrush habitat and affect the suitability of the habitat for the various life processes of the bi-State DPS. Pinyon-juniper woodlands are a native vegetation community dominated by pinyon pine and various juniper species that can encroach upon, infill, and eventually replace sagebrush habitat (Factors A and E). Some portions of the bi-State DPS's range are also being adversely affected by *Pinus jeffreyi* (Jeffrey pine) encroachment. Woodland encroachment has caused significant, measurable habitat loss throughout the range of the bi-State DPS. However, techniques to address this habitat impact are available and being implemented. Woodlands have expanded by an estimated 20,234 to 60,703 hectares (ha) (50,000 to 150,000 acres (ac)) over the past decade in the bi-State area, but woodland treatments have been implemented on 7,904 ha (19,533 ac) (Service 2013b, unpublished

data; Bi-State TAC 2014a, *in litt.*), and continued treatments are one of the keystone conservation measures of the BSAP and will continue to reduce the impact of woodland encroachment.

In general, nonnative plants are not abundant in the bi-State area, with the exception of cheatgrass, which occurs in all PMUs throughout the range of the DPS (although it is currently most extensive in the Pine Nut PMU). Alteration of the fire ecology of the bi-State area is of concern. Land managers have had little success preventing cheatgrass invasion in the West, and elevational barriers to occurrence are becoming less restrictive (Miller *et al*. 2011, p. 161; Brown and Rowe 2004, *in litt.*, entire). The best available data suggest that future conditions, mostly influenced by precipitation and winter temperatures, will remain hospitable for cheatgrass (Bradley 2009, p. 201). Cheatgrass is a challenge to the sagebrush shrub community and its spread would be detrimental to sage-grouse in the bi-State area. However, these impacts can be offset through a reduction of other threats, such as reducing the likelihood of wildfires that can result in shortened fire frequency intervals (favorable to cheatgrass) by removing source material, such as pinyon-juniper woodlands (see *Wildfires and Altered Fire Regime* section below). Through ongoing and planned implementation of the BSAP removal of pinyon-juniper woodlands will remove source materials for fires and help reduce the threat of cheatgrass expansion.

In addition, the encroachment of native woodlands (particularly pinyon-juniper) into sagebrush habitats is occurring throughout the bi-State area. We predict that future

woodland encroachment will continue across the entire bi-State area, but recognize this is a potentially manageable threat through treatment and management actions, such as those included in the BSAP.

Overall, invasive nonnative and native plants occur throughout the entire bi-State DPS's range. We concluded in the proposed listing rule that their spread was a significant factor for proposing to list the DPS as a threatened species based on the extensive amount of pinyon-juniper encroachment and cheatgrass invasion that is occurring throughout the DPS's range, and the interacting impact these invasions have on habitat quality (e.g., reduces foraging habitat, increases likelihood of wildfire) and habitat fragmentation. Conservation efforts that address the impacts from increasing nonnative, invasive and native plants have continued to be implemented since publication of the proposed listing rule, including (but not limited to): conducting conifer (pinyon-juniper) removal; restoring critical meadow/riparian habitat areas; and conducting weed treatments for invasive, nonnative plants such as cheatgrass. With continued implementation of conservation actions associated with the BSAP (Bi-State TAC 2012a, entire), impacts from increasing nonnative, invasive and native plants are significantly reduced. See the *Nonnative, Invasive and Native Increasing Plants* section of the Species Report for further discussion (Service 2015a, pp. 78–84).

The BSAP (Bi-State TAC 2012a, entire) was designed to counter effects such as (but not limited to) the spread of nonnative, invasive and native plants. Because we have determined that the partially completed and future conservation efforts will be

implemented and effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** below), we find the spread of nonnative, invasive and native plants is no longer a significant impact into the future.

Wildfires and Altered Fire Regime

Wildfire is the principle disturbance mechanism affecting sagebrush communities, although the nature of historical fire patterns, particularly in Wyoming big sagebrush vegetation communities, is not well-understood and historically infrequent (Miller and Eddleman 2000, p. 16; Zouhar *et al*. 2008, p. 154; Baker 2011, pp. 189, 196). The historical sagebrush systems likely consisted of extensive sagebrush habitat dotted by small areas of grassland that were maintained by numerous small fires with long interludes between fires, which accounted for little burned area, and that were punctuated by large fire events (Baker 2011, p. 197). In general, fire extensively reduces sagebrush within burned areas, and the most widespread species of sagebrush can take decades to reestablish and much longer to return to pre-burn conditions (Braun 1998, p. 147; Cooper *et al*. 2007, p. 13; Lesica *et al.* 2007, p. 264; Baker 2011, pp. 194–195).

When intervals between wildfire events become unnaturally long in sagebrush communities, woodlands have the ability to expand (allowing seedlings to establish and trees to mature (Miller *et al*. 2011, p. 167)) when they are adjacent to or are present (in small quantities) within sagebrush habitat. Conifer woodlands have expanded into sagebrush ecosystems throughout the sage-grouse's range over the last century (Miller *et*

al. 2011, p. 162). Alternatively, a shortened fire frequency interval within sagebrush habitat can result in the invasion of nonnative, invasive, annual grasses, such as cheatgrass and medusahead rye; once these nonnatives are established, wildfire frequency within sagebrush ecosystems can increase (Zouhar *et al*. 2008, p. 41; Miller *et al*. 2011, p. 167; Balch *et al*. 2013, p. 178).

While multiple factors can influence sagebrush persistence, wildfire can cause large-scale habitat losses that lead to fragmentation and isolation of sage-grouse populations (Factors A and E). In addition to loss of habitat, wildfire can fragment sage-grouse habitat and contribute to isolation of populations, making them more susceptible to extirpation from other threats (Knick and Hanser 2011, p. 395; Wisdom *et al.* 2011, p. 469). Thus, while direct loss of habitat due to wildfire is a significant factor associated with population persistence for sage-grouse (Beck *et al*. 2012, p. 452), the indirect effect from loss of connectivity among populations may expand the influence of this threat beyond the physical fire perimeter.

Wildfire is considered a relatively high risk across all the PMUs in the bi-State area due to its ability to affect large landscapes in a short period of time (Bi-State TAC 2012a, pp. 19, 26, 32, 37, 41, 49). Furthermore, the future risk of wildfire is exacerbated by the presence of people, invasive species, and climate change. While dozens of wildfires have occurred in the Pine Nut, Desert Creek-Fales, Bodie, and South Mono PMUs (fewer in the Mount Grant and White Mountains PMUs) over the past 20 years, to date there have been relatively few large-scale events. In general, although current data

do not indicate an increase of wildfires in the bi-State DPS, based on likely future habitat conditions, we predict an increase in wildfires over time.

Changes in fire ecology over time have resulted in an altered fire regime in the bi-State area, presenting future wildfire risk in all PMUs (Bi-State TAC 2012a, pp. 19, 26, 32, 37, 41, 49). On one hand, a reduction in fire occurrence has facilitated the expansion of woodlands into montane sagebrush communities in all PMUs (see *Nonnative, Invasive and Native Plants*, above). Meanwhile, a pattern of increased wildfire occurrence in sagebrush communities is apparent in the Pine Nut PMU. Each of these alterations to wildfire regimes has contributed to fragmentation of habitat and the isolation of the sage-grouse populations (Bi-State Local Planning Group 2004, pp. 95–96, 133).

Fire is one of the primary factors linked to population declines of sage-grouse across the West because of long-term loss of sagebrush and frequent conversion to monocultures of nonnative, invasive grasses (Connelly and Braun 1997, p. 7; Johnson *et al*. 2011, p. 424; Knick and Hanser 2011, p. 395). Within the bi-State area, the BLM and U.S. Forest Service (USFS) currently manage the area to limit the loss of sagebrush habitat (BLM 2012, entire; USFS 2012, entire). Based on the best available information, historical wildfire events have not removed a significant amount of sagebrush habitat across the bi-State area, and conversion of sagebrush habitat to a nonnative, invasive vegetation community has been restricted (except for the Pine Nut PMU).

Restoration of altered sagebrush communities following fire can be difficult, requires many years, and may be ineffective in the presence of nonnative, invasive grass species. Additionally, sage-grouse are slow to recolonize burned areas even if structural features of the shrub community have recovered (Knick *et al*. 2011, p. 233). However, impacts from wildfire are addressed through restoration actions outlined in the BSAP, including fuels reduction and rehabilitation efforts, which require long-term monitoring to assure conservation objectives are met for restoring potential habitats post-wildfire (Arkle *et al.* 2014).

While it is not currently possible to predict the extent or location of future fire events in the bi-State area, and historical wildfire events have not removed a significant amount of sagebrush habitat across the bi-State area to date, we anticipated in the proposed listing rule and reconfirm here that fire frequency may increase in the future due to the increasing presence of cheatgrass and people, and the projected effects of climate change. If offsetting conservation measures are not implemented, increasing wildfires in sagebrush habitats could adversely affect the DPS.

Overall, the potential threat of wildfire and the existing altered fire regime occurs throughout the bi-State DPS's range. We concluded in the proposed listing rule that significant impacts would be expected to continue or increase in the future based on a continued fire frequency pattern that exacerbates pinyon-juniper encroachment into sagebrush habitat in some locations, but also an increased fire frequency in other

locations that promotes the spread of cheatgrass and other invasive species that in turn can hamper recovery of sagebrush habitat.

Conservation efforts that address the impacts from the threat of wildfire and the existing altered fire regime have continued to be implemented since publication of the proposed listing rule, including (but not limited to): conducting conifer (pinyon-juniper) removal; and conducting weed treatments for invasive, nonnative plants such as cheat grass. With continued implementation of conservation actions associated with the BSAP (Bi-State TAC 2012a, entire), impacts from wildfire are significantly reduced. See the *Wildfires and Altered Fire Regime* section of the Species Report for further discussion (Service 2015a, pp. 84–91).

The BSAP (Bi-State TAC 2012a, entire) was designed to counter effects such as (but not limited to) wildfire ignition risks and catastrophic fire. Therefore, fuels reduction projects and rehabilitation efforts post-wildfire have been and will continue to be implemented into the future to address the potential impacts from wildfire. Because we have determined that the partially completed and future conservation efforts will be implemented and effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** below), we conclude that wildfires and altered fire regime are no longer a significant impact into the future.

Infrastructure

Infrastructure is described in the Species Report (Service 2015a, pp. 51–65) to include features that assist or are required for the pursuit of human-initiated development or an associated action. Five infrastructure features are impacting the bi-State DPS: three linear features (roads, power lines, and fences) and two site-specific features (landfills and communication towers). While there may be other features that could be characterized as infrastructure (such as railroads or pipelines), these are not present in the bi-State area, and we are unaware of any information suggesting they would impact the bi-State DPS in the future.

In the bi-State area, linear infrastructure impacts each PMU both directly and indirectly to varying degrees. Existing roads, power lines, and fences degrade and potentially fragment sage-grouse habitat (such as Braun 1998, pp. 145, 146) (Factor A), and contribute to direct mortality through collisions (such as Patterson 1952, p. 81) (Factor E). In addition, roads, power lines, and fences deter the sage-grouse's use of otherwise suitable habitats adjacent to current active areas, and increase predators (by providing additional perches) and invasive plants (through increased traffic volume to facilitate spread of invasive plants) (such as Forman and Alexander 1998, pp. 207–231 and Connelly *et al.* 2000a, p. 974).

Given current and future development (based on known energy resources), the Mount Grant, Desert Creek-Fales, Pine Nut, and South Mono PMUs are most likely to be impacted by new power lines and associated infrastructure. Wisdom *et al.* (2011, p. 463) reported that across the entire range of the greater sage-grouse, the mean distance to

highways and transmission lines for extirpated populations was approximately 5 kilometers (km) (3.1 miles (mi)) or less. In the bi-State area, 64 percent of annually occupied leks are within 5 km (3.1 mi) of paved secondary highways, and 38 percent are within this distance to existing transmission lines (Service 2013b, unpublished data). Therefore, the apparent similarity between existing bi-State conditions and extirpated populations elsewhere suggests that persistence of substantial numbers of leks within the bi-State DPS would likely be negatively influenced by these anthropogenic features if it were not for the ongoing and planned implementation of measures included in the BSAP to reduce impacts of these features.

The geographic extent, density, type, and frequency of linear infrastructure disturbance in the bi-State area have changed over time. While substantial new development of some of these features (e.g., highways) is unlikely, other infrastructure features may increase (unimproved roads, power lines, fencing, and communication towers), at least until such time as the BLM and USFS updated Land Use Plans are fully implemented. With the increase of OHV usage within the range of the bi-State DPS, the potential impact to the sage-grouse and its habitat caused by continued use of secondary or unimproved roads may become of greater importance as traffic volume increases rates of disturbance and the spread of nonnative invasive plants in areas that traditionally have been traveled relatively sporadically.

Other types of non-road infrastructure (e.g., cellular towers and landfills) also appear to be adversely impacting the bi-State DPS. At least eight cellular tower locations

are currently known to exist in occupied habitat (all PMUs) in the bi-State area. Wisdom *et al*. (2011, p. 463) determined that cellular towers likely contribute to population extirpation, and additional tower installations may occur in the near future as development continues. The landfill facility in Long Valley (within the South Mono PMU) may be influencing sage-grouse population demography in the area, as nest success is comparatively low and subsidized avian nest predator numbers are high (Kolada *et al*. 2009a, p. 1,344). This large population of sage-grouse (i.e., one of two core populations in the bi-State area) currently appears stable. Recovery following any potential future perturbations affecting other vital rates (i.e., brood survival and adult survival) could be limited by nesting success if offsetting conservation measures (such as the planned removal of the landfill in Long Valley) are not implemented.

Overall, infrastructure occurs in various forms throughout the bi-State DPS's range and has adversely impacted the DPS. We concluded in the proposed listing rule that infrastructure impacts (particularly fencing, power lines, and roads) were a significant factor for proposing to list the DPS as a threatened species. If left unchecked, these impacts would be expected to continue or increase in the future and result in habitat fragmentation; limitations for sage-grouse recovery actions due to an extensive road network, power lines, and fencing; and a variety of direct and indirect impacts, such as loss of individuals from collisions or structures that promote increased potential for predation. Collectively, these threats may result in perturbations that influence both demographic vital rates of sage-grouse (e.g., reproductive success and adult sage-grouse survival) and habitat suitability in the bi-State area.

Importantly, conservation efforts that address infrastructure impacts have continued to be implemented since publication of the proposed listing rule, including (but not limited to): removing power lines; implementing both permanent and seasonal road closures; removing racetrack fencing; and conducting initial procedures to remove the landfill in Long Valley. With continued implementation of conservation actions associated with the BSAP (Bi-State TAC 2012a, entire), infrastructure-related impacts are significantly reduced. See the *Infrastructure* section of the Species Report for further discussion (Service 2015a, pp. 51–65).

The BSAP (Bi-State TAC 2012a, entire) was designed to counter effects such as (but not limited to) infrastructure. Because we have determined that the partially completed and future conservation efforts will be implemented and effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** below), we believe impacts associated with infrastructure may no longer be considered a significant impact into the future.

Grazing and Rangeland Management

Livestock grazing continues to be the most widespread land use across the sagebrush biome (Knick *et al.* 2003, p. 616; Connelly *et al.* 2004, p. 7-29; Knick *et al.* 2011, p. 219), including within the bi-State area. However, links between grazing practices and population levels of sage-grouse are not well-studied (Braun 1987, p. 137;

Connelly and Braun 1997, p. 231). Improperly managed domestic livestock management has the potential to result in sage-grouse habitat degradation (Factor A). Grazing can adversely impact nesting and brood-rearing habitat by decreasing vegetation used for concealment from predators (Factors A and C). If improperly managed, grazing also compacts soils; decreases herbaceous vegetation abundance; alters soil characteristics and increases soil erosion; and increases the probability of invasion of nonnative, invasive plant species (Factor A). Livestock management and associated infrastructure (such as water developments and fencing) can degrade important nesting and brood-rearing habitat, reduce nesting success, and facilitate the spread of WNv (Factors A, C, and E). However, despite numerous documented negative impacts, some research suggests that, under specific conditions, grazing domestic livestock can benefit sage-grouse (Klebenow 1981, p. 121). Other research conducted in Nevada found that cattle grazing can be used to stimulate forbs important as sage-grouse food (Neel 1980, entire; Klebenow 1981, entire; Evans 1986, entire).

Similar to domestic livestock, grazing and management of feral horses have the potential to negatively affect sage-grouse habitats by decreasing grass cover, fragmenting shrub canopies, altering soil characteristics, decreasing plant diversity, and increasing the abundance of invasive cheatgrass (Factor A). Native ungulates (mule deer (*Odocoileus hemionus*) and pronghorn antelope (*Antilocapra americana*)) co-exist with sage-grouse in the bi-State area, but we are not aware of significant impacts from these species on sage-grouse populations or sage-grouse habitat. However, the impacts from different ungulate taxa may have an additive negative influence on sage-grouse habitats (Beever and

Aldridge 2011, p. 286) if offsetting conservation measures are not implemented. Cattle, horses, mule deer, and pronghorn antelope each use the sagebrush ecosystem somewhat differently, and the combination of multiple ungulate species may produce a different result than a single species.

There are localized areas of habitat degradation in the bi-State area attributable to past grazing practices that indirectly and, combined with other impacts, cumulatively affect sage-grouse habitat. In general, upland sagebrush communities in the Pine Nut and Mount Grant PMUs deviate from desired conditions for sage-grouse due to lack of understory plant species, while across the remainder of the PMUs localized areas of meadow degradation are apparent, and these conditions may influence sage-grouse populations through altering nesting and brood-rearing success. Currently, there is little direct evidence linking grazing effects and sage-grouse population responses. Analyses for grazing impacts at the landscape scales important to sage-grouse are confounded by the fact that almost all sage-grouse habitat has at one time been grazed, and thus, no ungrazed control areas exist for comparisons (Knick *et al*. 2011, p. 232). Across the bi-State area, we anticipate rangeland management will continue into the future, and some aspects (such as feral horses) will remain difficult to manage. Currently, livestock management in the bi-State area meets desired BLM Rangeland Health Standards or their equivalent (i.e., the standards used by Federal agencies to assess habitat condition; BLM 2014b, *in litt*.). Remaining impacts caused by historical practices will linger as vegetation communities and disturbance regimes recover.

Overall, impacts from past grazing and rangeland management occur within localized areas throughout the bi-State DPS's range (i.e., all PMUs, although impacts are more pronounced in some PMUs than others). We concluded in the proposed listing rule that grazing and rangeland management was a factor (albeit not significant) for proposing to list the DPS as a threatened species as a result of ongoing habitat degradation impacts that may affect sage-grouse habitat indirectly and cumulatively in the bi-State area, resulting in an overall reduction in aspects of habitat quality (e.g., fragmentation, lack of understory plants, increased presence of nonnative plant species), especially in the Pine Nut and Mount Grant PMUs.

Importantly, conservation efforts that address the impacts from grazing and rangeland management have continued to be implemented since publication of the proposed listing rule, including (but not limited to): (1) Completing drafts and beginning to implement the new BLM and Forest Service Land Use Plan amendments (USDI and USDA 2015, entire), which are a considerable improvement for conservation of the bi-State DPS and its habitat; repairing watering facilities, irrigation structures, and fencing around natural riparian areas to control grazing activity; increasing monitoring and management of horse and burrow herds; and restoring meadow/riparian habitat in critical brood-rearing habitat areas. With continued implementation of conservation actions associated with the BSAP (Bi-State TAC 2012a, entire), impacts from grazing and rangeland management are significantly reduced. See the *Grazing and Rangeland Management* section of the Species Report for further discussion (Service 2015a, pp. 71–78).

The BSAP (Bi-State TAC 2012a, entire) was designed to counter effects such as (but not limited to) livestock and wild horse grazing. Because we have determined that the partially completed and future conservation efforts will be implemented and effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** below), we believe impacts associated with grazing and rangeland management are no longer be a concern into the future.

Small Population Size and Population Structure

Sage-grouse have low reproductive rates and high annual survival (Schroeder *et al.* 1999, pp. 11, 14; Connelly *et al.* 2000a, pp. 969–970), resulting in slower potential or intrinsic population growth rates than is typical of other game birds. Also, as a consequence of their site fidelity to seasonal habitats (Lyon and Anderson 2003, p. 489), measurable population effects may lag behind negative habitat impacts (Wiens and Rotenberry 1985, p. 666). Sage-grouse populations have been described as exhibiting multi-annual fluctuations, meaning that some mechanism or combination of mechanisms is causing populations to fluctuate through time

The bi-State DPS comprises approximately 43 active leks representing 3 to 6 relatively discrete populations (see *Species Information*, above, and the *Current Range/Distribution and Population Estimates/Annual Lek Counts* section of the Species Report (Service 2015a, pp. 17–31)). Fitness and population size, across a variety of taxa,

are strongly correlated, and smaller populations are more challenged by stochastic environmental and demographic events (Keller and Waller 2002, pp. 239–240; Reed 2005, p. 566). When coupled with mortality stressors related to human activity (e.g., infrastructure, recreation) and significant fluctuations in annual population size, long-term persistence of small populations is uncertain (Traill *et al*. 2010, entire). The Pine Nut PMU has the smallest number of sage-grouse of all bi-State area PMUs (usually fewer than 100 individuals, and ranging from less than 100 to 608 individuals as observed from data collected between 2004 and 2014 (Table 1, above), representing approximately 5 percent of the DPS). However, each population in the bi-State DPS is relatively small and may be below the theoretical minimum threshold (as interpreted by sage-grouse experts and not statistically proven (Aldridge and Brigham 2003, p. 30; Garton *et al*. 2011, pp. 310, 374)) for long-term persistence, as is the entire DPS on average (estimated 2,497 to 9,828 individuals). Nonetheless, the populations comprising the bi-State DPS have continued to persist despite relatively small numbers of birds and annual fluctuations.

Overall, small population size and a discontinuous population structure occur throughout the bi-State DPS's range, which could make the bi-State DPS more susceptible to threats described herein both currently and likely in the future if offsetting conservation measures are not implemented. Some literature (i.e., Franklin and Frankham 1998, entire; Traill *et al*. 2010, entire) suggest that greater than 5,000 individuals are required for any species' populations to have an acceptable degree of resilience in the face of environmental fluctuations and catastrophic events, and for the

continuation of evolutionary processes. This conservation biology rule-of-thumb (that more than 5,000 individuals are required to provide ample resiliency) may be useful as a general guideline when assessing a species' resiliency, but should not be applied without consideration of a particular species' life history and specific population-level stressors to determine its status. In this context, conservation efforts addressing the threats acting upon these small populations have been implemented since publication of the proposed listing rule, including (but not limited to) restoring critical brood-rearing habitat areas and addressing invasive nonnative and native plants. Because we expect conservation implementation to continue under the BSAP (Bi-State TAC 2012a, entire), impacts affecting small populations are significantly reduced.

Resiliency, Redundancy, and Representation

In this section, we synthesize the information above to evaluate resiliency, redundancy, and representation as they relate to the bi-State DPS. *Resiliency* refers to the capacity of an ecosystem, population, or organism to recover quickly from disturbance by tolerating or adapting to changes or effects caused by a disturbance or a combination of disturbances. *Redundancy*, in this context, refers to the ability of a species to compensate for fluctuations in or loss of populations across the species' range such that the loss of a single population has little or no lasting effect on the structure and functioning of the species as a whole. *Representation* refers to the conservation of the diversity of a species, including genetic makeup.

The degree of resiliency of a species is influenced by both the degree of genetic diversity across the species, and the number of individuals. Resiliency increases with increasing genetic diversity and/or a higher number of individuals; it decreases when the species has less genetic diversity and/or fewer individuals. In the case of the bi-State DPS resiliency may be lower to some degree because the total population size is relatively small (e.g., compared to the population size of many upland game birds), with some populations having low numbers or negative population trends. From a genetics standpoint, sage-grouse in the bi-State area contain a large number of unique genetic haplotypes not found elsewhere within the range of the species (Benedict *et al.* 2003, p. 306; Oyler–McCance *et al.* 2005, p. 1,300; Oyler–McCance and Quinn 2011, p. 92; Oyler-McCance *et al*. 2014, p. 5), and genetic diversity of the bi-State DPS does not appear to be low. The genetic diversity present in the bi-State area population is comparable to other populations of sage-grouse, suggesting that the differences are not due to a genetic bottleneck or founder event (Oyler–McCance and Quinn 2011, p. 91). These studies provide evidence of geographic isolation from the remainder of the species, as the present genetic uniqueness exhibited by bi-State area sage-grouse developed over thousands and perhaps tens of thousands of years, hence, prior to the Euro-American settlement (Benedict *et al.* 2003, p. 308; Oyler–McCance *et al.* 2005, p. 1,307).

This information suggests that while resiliency of the bi-State DPS may be reduced to some degree as a result of relatively small total population size, the genetic diversity in the bi-State area improves the capacity of the DPS to recover from disturbance, or adapt to changes or effects caused by a disturbance or a combination of

disturbances. Moreover, conservation actions already completed, underway, and planned for the future pursuant to the BSAP have reduced threats to the DPS now and into the future, and thus have reduced the likelihood of future significant disturbances to the bi-State DPS.

Multiple, interacting populations across a broad geographic area provide insurance against the risk of extinction caused by catastrophic events (redundancy). Population redundancy currently exists across the bi-State DPS, but could be a concern into the future. The most recent genetic data analyses (Oyler-McCance *et al.* 2014; Tebbenkamp 2014) support our determination that there are between three and six populations (or groups of birds) in the bi-State area that largely operate demographically independent of each other. Long-term projections (30 years) suggest that the two core populations (Bodie Hills (Bodie PMU) and Long Valley (South Mono PMU)) have a relative high probability of maintaining long-term genetic and demographic viability (Garton *et al.* 2011, p. 310). However, the viability of the smaller populations, such as Pine Nut or Parker Meadows, is less certain (Lande 1988, pp. 1456–1457; Stephens *et al.* 1999, p. 186; Frankham *et al.* 2002, pp. 312–317; Coates *et al.* 2014, p. 15). If a population is permanently lost, the DPS' population redundancy would be lowered, thereby decreasing the DPS' chances of survival in the face of potential environmental, demographic, and genetic stochastic factors and catastrophic events (extreme drought, wildfire, disease, etc.). However, conservation measures included in the BSAP which are ongoing and planned for the future have reduced the level of threats faced by the

population that make up the bi-State DPS and have thus decreased the probability that any of the smaller populations will be extirpated.

The aggregate number of individuals across multiple populations increases the probability of demographic persistence and preservation of overall genetic diversity by providing an important genetic reservoir (representation). Representation across the bi-State DPS is moderate to high, with three to six genetically different groups across the bi-State area (Oyler-McCance *et al.* 2014; Tebbenkamp 2014). In general, genetic diversity in the bi-State area is comparable to the levels of genetic diversity found elsewhere across the greater sage-grouse range (Oyler–McCance and Quinn 2011, p. 91). Among populations in the bi-State area genetic diversity varies with the lowest diversity apparent in the White Mountains (White Mountain PMU) and Parker Meadows (South Mono PMU) populations. We expect the risks associated with reduced genetic diversity to be moderated by the ongoing and continued restoration of habitat, which will improve connectivity and minimize habitat fragmentation, thereby potentially increasing gene flow and improving genetic diversity. There is some risk that one or more of the smaller, less secure populations (e.g., Pine Nut, Fales, and Parker Meadows) could become extirpated in the future, but the moderate to high level of representation across the bi-State DPS, and ongoing and planned conservation actions in the BSAP reduces the likelihood of future extirpations.

Small population size is not a threat to a species by itself. A species with a relatively small number of small populations may be a concern when there are significant

threats to the species such that one or more populations could be permanently lost. The bi-State sage-grouse is comprised of a relatively few number of populations of various sizes but with most being considered small in size. By addressing the most significant stressors on the bi-State DPS, ongoing and planned implementation of the BSAP has ameliorated threats to this species to the point where our previous concerns about the DPS' resiliency, redundancy and representation have been significantly reduced. Therefore, we conclude loss of representation is not a significant threat to the bi-State DPS now or into the future.

Summary of Small Population Size and Population Structure

Overall, small population size and a discontinuous population structure occur throughout the bi-State DPS's range. We concluded in the proposed listing rule that impacts associated with small population size are a concern both currently and likely in the future based on our understanding of the overall DPS population size and the apparent isolation among subpopulations contained within the DPS. Conservation efforts that address various impacts acting upon these small populations have continued to be implemented since publication of the proposed listing rule, including (but not limited to) restoring critical brood-rearing habitat areas and addressing invasive nonnative and native plants. With continued implementation of conservation actions associated with the BSAP (Bi-State TAC 2012a, entire), impacts affecting small populations are significantly reduced. See the *Small Population Size and Population Structure* section of the Species Report for further discussion (Service 2015a, pp. 120–126).

The BSAP (Bi-State TAC 2012a, entire) was designed to counter effects including (but not limited to) small and isolated populations. Because we have determined that the partially completed and future conservation efforts will be implemented and effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** below), we believe impacts associated with small population size within the bi-State area may no longer be considered a significant impact into the future.

Urbanization and Habitat Conversion

Historical and recent conversion of sagebrush habitat on private lands for agriculture, housing, and associated infrastructure (Factor A) within the bi-State area has negatively affected sage-grouse distribution and population extent in the bi-State DPS. These alterations to habitat have been most pronounced in the Pine Nut and Desert Creek-Fales PMUs and to a lesser extent the Bodie, Mount Grant, South Mono, and White Mountains PMUs. Although only 11 percent of suitable sage-grouse habitat occurs on private lands in the bi-State area, and only a subset of that could potentially be developed, conservation actions on adjacent public lands could be compromised due to the significant percentage (up to approximately 40 percent (Casazza *et al*. 2009, pp. 19, 27, 35; NDOW 2011, *in litt*.)) of late brood-rearing habitat that occurs on the private lands. Sage-grouse display strong site-fidelity to traditional seasonal habitats and loss of specific sites (such as mesic meadow or spring habitats that frequently occur on

potentially developable private lands in the bi-State area) can have pronounced population impacts (Connelly *et al*. 2000a, p. 970; Atamian *et al*. 2010, p. 1533). The influence of land development and habitat conversion on the population dynamics of sage-grouse is greater than a simple measure of spatial extent because of the indirect effects from the associated increases in human activity, as well as the disproportionate importance of some seasonal habitat areas, such as mesic areas for brood-rearing.

Although not considered a significant threat at the time of the proposed rule nor currently, urbanization and habitat conversion is not universal across the bi-State area, but localized areas of impacts have been realized throughout the DPS's range, and additional future impacts would be expected if left unchecked. It is important to note that conservation efforts that address the impacts associated with urbanization and human disturbance have continued to be implemented since publication of the proposed listing rule, including (but not limited to): acquisition and permanent protection of critical sage-grouse brood-rearing habitat, and implementing new sage-grouse policies in applicable Mono County plans and programs. With continued implementation of conservation actions associated with the BSAP (Bi-State TAC 2012a, entire), impacts from urbanization and habitat conversion are significantly reduced. See the *Urbanization and Habitat Conversion* section of the Species Report for further discussion (Service 2015a, pp. 45–51).

The BSAP (Bi-State TAC 2012a, entire) was designed to counter effects such as (but not limited to) urbanization and human disturbance. Because we have determined

that the partially completed and future conservation efforts will be implemented and effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** below), we believe that urbanization and human disturbance is not a significant impact into the future.

Mining

Surface and subsurface mining for mineral resources (gold, silver, aggregate, and others) results in direct loss of habitat when it occurs in sagebrush habitats (Factor A). The direct impact from surface mining is usually greater than it is from subsurface mining, and habitat loss from both types of mining can be exacerbated by the storage of overburden (soil removed to reach subsurface resource) in otherwise undisturbed habitat. Sage-grouse and nests with eggs could be directly affected by crushing or vehicle collision (Factor E). Sage-grouse also could be impacted indirectly from an increase in human presence, land use practices, ground shock, noise, dust, reduced air quality, degradation of water quality and quantity, and changes in vegetation and topography (Moore and Mills 1977, entire; Brown and Clayton 2004, p. 2) (Factor E). Although potential effects are many, information relating actual sage-grouse response to mineral developments is not extensive, and information available to us does not lead us to conclude that mining is a significant threat in the bi-State population area.

Currently, operational surface and subsurface mining activities are not impacting the two largest (core) populations within the bi-State DPS. Areas in multiple PMUs are

open to mineral development, and mining operations are currently active in the Mount Grant, Bodie, South Mono, and Pine Nut PMUs, including some occupied habitat areas. There is potential for additional mineral developments to occur in the bi-State area in the future based on known existing mineral resources and recent permit request inquiries with local land managers. We are aware of four active Plans of Operations for mining that overlap bi-State DPS habitat and on the order of 20,000 active mine claims (USFS and BLM 2014, pp. 112–113; USDI and USDA 2015, pp. 117–129). We note, however, that a mining claim does not equate to an actual mining proposal. While all six PMUs have the potential for mineral development, based on current land designations and past activity, the Pine Nut and Mount Grant PMUs are most likely to see new and additional activity.

Overall, mining currently occurs in limited locations within four PMUs, including small-scale activities such as gold and silver exploration (Pine Nut, Bodie, and South Mono PMUs), and two open pit mines (Mount Grant PMU). Additionally, new proposals being considered for mining activity in the Pine Nut PMU could, if approved, impact the single active lek remaining in the north end of the Pine Nut PMU. In general, potential exists for mining operations to expand both currently and into the future, but the scope of impacts from these proposals and existing mining is not considered extensive. We concluded in the proposed listing rule, and reaffirm here, that by itself, mining is not considered a significant impact to the bi-State population. If left unchecked, impacts to sage-grouse and its habitat outside of the two largest (core) populations would be

expected to continue or increase in the future. See the *Mining* section of the Species Report for further discussion (Service 2015a, pp. 65–68).

Conservation efforts that address the impacts from mining have continued to be implemented since publication of the proposed listing rule, such as reducing human-related disturbances (e.g., road noise/traffic). The BSAP includes conservation actions targeting development and human distrubances that will reduce the the minor or potential impacts from mining (Bi-State TAC 2012a, entire). Because we have determined that the partially completed and future conservation efforts will be implemented and effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** below), we believe impacts associated with mining in the bi-State population area are not a concern into the future.

Renewable Energy Development

Renewable energy facilities (including geothermal facilities, wind power facilities, and solar arrays) require structures such as power lines and roads for construction and operation, and avoidance of such features by sage-grouse (Factor E) and other prairie grouse is documented (Holloran 2005, p. 1; Pruett *et al.* 2009, p. 6; see discussions regarding roads and power lines in the *Infrastructure* section of the Species Report (Service 2015a, pp. 52–60)). Assuming no intervention or increased protections, renewable energy development and expansion could result in direct loss of habitat and

indirect impacts affecting sage-grouse and their habitat (e.g., habitat degradation and population isolation) (Factor A).

Minimal direct habitat loss has occurred in the bi-State DPS due to renewable energy development, specifically from the only operational geothermal facility in the bi-State area, which is within the South Mono PMU. However, the likelihood of additional renewable energy facility development, especially geothermal, in the bi-State area is high based on current Federal leases. Inquiries by energy developers (geothermal, wind) have increased in the past several years (Dublino 2011, pers. comm.). There is strong political and public support for energy diversification in Nevada and California, and the energy industry considers the available resources in the bi-State area to warrant investment (Renewable Energy Transmission Access Advisory Committee 2007, p. 8). Based on our current assessment of development probability, the Mount Grant PMU and to a lesser degree the Desert Creek-Fales PMU are most likely to be negatively affected by renewable energy development. However, interest by developers of renewable energy changes rapidly, making it difficult to predict potential outcomes.

Overall, renewable energy development has minimally impacted one location in the South Mono PMU to date, and could potentially result in impacts in other parts of the bi-State DPS's range in the future based on current leases. The best available data indicate that several locations in the bi-State area (Pine Nut and South Mono PMUs) have suitable wind resources based on recent leasing and inquiries by facility developers (although no active leases currently occur), and it appears the Mount Grant PMU and to a

lesser degree the Desert Creek–Fales PMU are likely to be most negatively affected. We are uncertain of the probability of future inquires or development of wind energy in the bi-State area. We concluded in the proposed listing rule, and reaffirm here, that by itself, renewable energy development is not considered a significant impact at this time.

The BSAP (Bi-State TAC 2012a, entire) was designed to counter effects to the bi-State DPS; although renewable energy development is not specifically addressed in the BSAP, as minimal habitat loss due to renewable energy projects has occurred historically (Service 2015a, pp. 68–71). The BSAP (Bi-State TAC 2012a, entire), contains conservation efforts that would address potential impacts from renewable energy if a project were to be proposed, such as reducing human-related disturbances (e.g., road noise/traffic). With continued implementation of conservation actions associated with the BSAP, the potential impacts from renewable enegery are minimized. See the *Renewable Enegy* section of the Species Report for further discussion (Service 2015a, pp. 68–71). Further, the Bi-State TAC and LAWG (which includes Service participation) are examining all potential impacts to the bi-State DPS and its habitat, as demonstrated through the agencies implementation of an Adaptive Management Strategy (Bi-State EOC 2014, *in litt.*) and the CPT. Because we have determined that the partially completed and future conservation efforts will be implemented and effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** below), we believe impacts associated with renewable energy development may no longer be a concern into the future.

Disease

Sage-grouse are hosts for a variety of parasites and diseases (Factor C) including macroparasitic arthropods, helminths (worms), and microparasites (protozoa, bacteria, viruses, and fungi) (Thorne *et al.* 1982, p. 338; Connelly *et al.* 2004, pp. 10-4 to 10-7; Christiansen and Tate 2011, p. 114), which can have varying effects on populations. Connelly *et al.* (2004, p. 10-6) note that, while parasitic relationships may be important to the long-term ecology of sage-grouse, they have not been shown to be significant to the immediate population status across the range of the DPS. However, Connelly *et al.* (2004, p. 10-3) and Christiansen and Tate (2011, p. 126) suggest that diseases and parasites may limit isolated sage-grouse populations as they interact with other demographic parameters such as reproductive success and immigration, and thus, the effects of diseases require additional study.

Viruses (such as coronavirus and WNv) are serious diseases that are known to cause death in grouse species, potentially influencing population dynamics (Petersen 2004, p. 46) (Factor C). Efficacy and transmission of WNv in sagebrush habitats is primarily regulated by environmental factors including temperature, precipitation, and anthropogenic water sources, such as stock ponds and coal-bed methane ponds that support mosquito vectors (Reisen *et al.* 2006, p. 309; Walker and Naugle 2011, pp. 131–132). WNv can be a threat to some sage-grouse populations, and its occurrence and impacts are likely underestimated due to lack of monitoring. The impact of this disease in the bi-State DPS is likely currently limited by ambient temperatures that do not allow

consistent vector and virus maturation. As noted in the proposed listing rule, predicted temperature increases associated with climate change may result in this threat becoming more consistently prevalent. We have no indication that other diseases or parasites are impacting the bi-State DPS.

Overall, multiple diseases have the potential to occur in the bi-State area, although WNv appears to be the only identified disease that warrants concern for sage-grouse in the bi-State area. We concluded in the proposed listing rule, and reaffirm here, that by itself, WNv is not considered a significant impact at this time because it is currently limited by ambient temperatures that do not allow consistent vector and virus maturation. However, WNv could be a concern for the future if predicted temperature increases associated with climate change result in this threat becoming more consistently prevalent. With continued implementation of conservation actions (WNv surveillance and mosquito abatement measures) associated with the BSAP (Bi-State TAC 2012a, entire), the minor or potential impacts from WNv are reduced to the point that we find disease is not a significant threat to the bi-State DPS.

Predation

Predation of sage-grouse is the most commonly identified cause of direct mortality during all life stages (Schroeder *et al.* 1999, p. 9; Connelly *et al.* 2000b, p. 228; Casazza *et al*. 2009, p. 45; Connelly *et al.* 2011, p. 65) (Factor C). However, sage-grouse have co-evolved with a variety of predators, and their cryptic plumage and behavioral

adaptations have allowed them to persist (Schroeder *et al.* 1999, p. 10; Coates 2007, p. 69; Coates and Delehanty 2008, p. 635; Hagen 2011, p. 96). Within the bi-State DPS, predation facilitated by habitat fragmentation (fences, power lines, and roads) and other human activities may be altering natural population dynamics in specific areas of the bi-State DPS. Data suggest certain populations are exhibiting deviations in vital rates below those anticipated (Koloda *et al*. 2009, p. 1344; Sedinger *et al.* 2011. p. 324). For example, within the Long Valley population of the South Mono PMU, known nest predators associated with a county landfill may be the cause of the reportedly low nesting success. In addition, low adult survival estimates for the Desert Creek-Fales PMU suggest predators may be influencing population growth there. However, we generally consider habitat alteration as the root cause of these results; teasing apart the interaction between predation rate and habitat condition is difficult.

Overall, predation is currently known to occur throughout the bi-State DPS's range. It is facilitated by habitat fragmentation (fences, power lines, and roads) and other human activities that may be altering natural population dynamics in specific areas throughout the bi-State DPS's range. We concluded in the proposed listing rule, and reaffirm here, that by itself, predation is not considered a significant impact at this time. Conservation efforts that address the impacts from predation have continued to be implemented since publication of the proposed listing rule, including (but not limited to): removing structures that attract predators (e.g., fencing, power lines), and conducting initial procedures to remove the landfill in Long Valley. With continued implementation of conservation actions associated with the BSAP (Bi-State TAC 2012a, entire), impacts

from predation are significantly reduced. See the predation discussion under the *Disease or Predation* section of the Species Report for further discussion (Service 2015a, pp. 114–120).

The BSAP (Bi-State TAC 2012a, entire) was designed to counter effects such as (but not limited to) the extent of predation risks to the bi-State DPS. Because we have determined that the partially completed and future conservation efforts will be implemented and effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** below), we believe that the risk of predation is not a concern into the future.

Climate

Climate change projections in the Great Basin suggest a hotter and stable-to-declining level of precipitation and a shift in precipitation events to the summer months; fire frequency is expected to accelerate; fires may become larger and more severe; and fire seasons will be longer (Brown *et al.* 2004, pp. 382–383; Neilson *et al*. 2005, p. 150; Chambers and Pellant 2008, p. 31; Global Climate Change Impacts in the United States 2009, p. 83). With these projections, drought (which is a natural part of the sagebrush ecosystem) is likely to be exacerbated. Drought reduces vegetation cover (Milton *et al.* 1994, p. 75; Connelly *et al.* 2004, p. 7-18), potentially resulting in increased soil erosion and subsequent reduced soil depths, decreased water infiltration, and reduced water storage capacity (Factor A). Drought can also exacerbate other natural events such as

defoliation of sagebrush by insects (Factor A). These habitat component losses can result in declining sage-grouse populations due to increased nest predation and early brood mortality (Factor E) associated with decreased nest cover and food availability (Braun 1998, p. 149; Moynahan *et al.* 2007, p. 1781).

In the bi-State area, drought is a natural part of the sagebrush ecosystem, and available information does not indicate that drought has influenced long-term population dynamics of sage-grouse under historical conditions. There are known occasions, however, where reduced brood-rearing habitat conditions due to drought have resulted in little to no recruitment within certain PMUs (Bodie and Pine Nut PMUs (Gardner 2009, pers. comm.)). If these conditions were to persist longer than the typical adult life-span, drought could have significant ramifications on population persistence. Further, drought impacts on the sage-grouse may be exacerbated when combined with other habitat impacts that reduce cover and food (Braun 1998, p. 148).

Based on the best available scientific and commercial information, the threat of climate change is not known to currently impact the bi-State DPS to such a degree that the viability of the DPS is at stake. A recent analysis conducted by NatureServe, which incorporates much of the information presented above, suggests a substantial contraction of both sagebrush and sage-grouse range in the bi-State area by 2060 (Comer *et al*. 2012, pp. 142, 145). Specifically (for example), this analysis suggests the current extent of suitable shrub habitat will decrease because of a less suitable climate condition for sagebrush and may improve suitability for woodland and drier vegetation communities,

which are not favorable to the bi-State DPS. The NatureServe predictions notwithstanding, while it is reasonable to assume the bi-State area will experience vegetation changes into the future, we do not know with a reasonable degree of certainty the nature of these changes or ultimately the effect this will have on the bi-State DPS.

It is possible that changes in atmospheric carbon dioxide levels, temperature, precipitation, and timing of snowmelt could act synergistically with other threats (such as wildfire and nonnative, invasive plant species) to produce yet unknown but likely negative effects to sage-grouse populations in the bi-State area. The overall impact of climate change to the bi-State DPS in the future could be moderate if existing threats (such as wildfire, and nonnative, invasive plant species) continue unabated, and climate changes exacerbate those threats.

By itself, climate change is not considered a significant impact at this time. We concluded in the proposed listing rule that climate change will potentially act in combination with other impacts to the bi-State DPS, further diminishing habitat (Factor A) and increasing isolation of populations (Factor E), making them more susceptible to demographic and genetic challenges or disease. Since the publication of the proposed rule, ongoing implementation of various conservation measures in the BSAP has reduced the significance of the threat of wildfire and invasive plants (e.g., through removal of pinyon-juniper woodland). Continued implementation of the BSAP further reduces the impacts of these threats to the bi-State sage-grouse. Therefore, even should climate change increase the threat of wildfire and invasive plants to some degree, we no longer

conclude that climate change acting in concert with these other threats constitutes a significant threat to the bi-State DPS. See the *Climate* section of the Species Report for further discussion (Service 2015a, pp. 91–99).

Recreation

Non-consumptive recreational activities (such as fishing, hiking, horseback riding, and camping as well as more recently popularized activities, such as OHV use and mountain biking) occur throughout the range of the greater sage-grouse, including throughout the bi-State DPS area. These activities can degrade wildlife resources, water, and land by distributing refuse, disturbing and displacing wildlife, increasing animal mortality, and simplifying plant communities (Boyle and Samson 1985, pp. 110–112) (Factor E). For example, disruption of sage-grouse during vulnerable periods at leks, or during nesting or early brood-rearing, could affect reproduction and survival (Baydack and Hein 1987, pp. 537–538). In addition, indirect effects to sage-grouse from recreational activities include impacts to vegetation and soils, and the facilitation of the spread of invasive species (Factor A). Impacts caused by recreational activities may be affecting sage-grouse populations in the bi-State area, and there are known localized habitat impacts.

Overall, recreation occurs throughout the bi-State DPS's range, although we do not have data that would indicate impacts to sage-grouse or their habitat are significant. We concluded in the proposed listing rule and reaffirm here that by itself, recreation is

not considered a significant impact at this time. However, if left unchecked, some forms of recreation could become a concern based on anticipated increases of recreational use within the bi-State area in the future. Populations of sage-grouse in the South Mono PMU are exposed to the greatest degree of pedestrian recreational activity, although they appear relatively stable at present. Conservation efforts that address recreational impacts have continued to be implemented since publication of the proposed listing rule, including (but not limited to): reducing human-related disturbances in high-use recreation areas (e.g., installing sage-grouse educational signs), conducting seasonal closures of lek viewing areas, and implementing both permanent and seasonal road closures. With continued implementation of conservation actions associated with the BSAP (Bi-State TAC 2012a, entire), impacts from recreation are significantly reduced. See the *Recreation* section of the Species Report for further discussion (Service 2015a, pp. 102–106).

The BSAP (Bi-State TAC 2012a, entire) was designed to counter effects such as (but not limited to) human disturbance to the bi-State DPS, including recreation-related impacts. Because we have determined that the partially completed and future conservation efforts will be implemented and effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** below), we believe impacts associated with recreation are no longer a concern into the future.

Overutilization Impacts

Potential overutilization impacts include recreational hunting (Factor B). Sage-grouse have not been commercially harvested in the bi-State area since the 1930s, and they are not expected to be commercially harvested in the future. Limited recreational hunting, based on the concept of compensatory mortality, was allowed across most of the DPS's range with the increase of sage-grouse populations by the 1950s (Patterson 1952, p. 242; Autenrieth 1981, p. 11). In recent years, hunting as a form of compensatory mortality for upland game birds (which includes sage-grouse) has been questioned (Connelly *et al.* 2005, pp. 660, 663; Reese and Connelly 2011, p. 111).

Recreational hunting is currently limited in the bi-State DPS and within generally accepted harvest guidelines. In the Nevada portion of the bi-State area, NDOW regulates hunting of sage-grouse. Most hunting of sage-grouse in the Nevada portion of the bi-State area is closed. NDOW closed the shotgun and archery seasons for sage-grouse in 1997, and the falconry season in 2003 (NDOW 2012, *in litt.*, p. 4). Hunting of sage-grouse may occur on tribal allotments located in the Pine Nut PMU where the Washoe Tribe of Nevada and California has authority. There are anecdotal reports of harvest by tribal members, but currently the Washoe Tribe Hunting and Fishing Commission does not issue harvest permits for greater sage-grouse (Warpeha 2009, pers. comm.). In the California portion of the bi-State area, CDFW regulates hunting of sage-grouse. Hunting historically occurred and continues to occur in the Long Valley (South Mono PMU) and Bodie Hills (Bodie PMU) areas (known as the South Mono and North Mono Hunt Units, respectively). As a result of work by Gibson (1998, entire) and documented population

declines in the bi-State DPS, CDFW has significantly reduced the number of permits issued (Gardner 2008, pers. comm.).

As stated in the proposed listing rule and reaffirmed here, it is unlikely that the scope and severity of hunting impacts would act in an additive manner to natural mortality of the bi-State DPS across its range due to the conservative approach that the State agencies employ in the single location (Long Valley) where hunting is permitted (specifically, harvest levels are below 5 to 10 percent of the fall population). In the bi-State area, hunting is limited to such a degree that it is not apparently restrictive to overall population growth currently nor expected to become so in the future (CDFW 2012, *in litt*.). Furthermore, we are unaware of any information to indicate that poaching significantly impacts bi-State sage-grouse populations.

Overall, sport hunting is currently limited and within generally accepted harvest guidelines. We concluded in the proposed listing rule and reaffirm here that it is unlikely that hunting will ever again reach levels that would act in an additive manner to mortality. In the bi-State area, hunting is limited to such a degree that it is not apparently restrictive to overall population growth. Furthermore, we are unaware of any information indicating that overutilization is significantly impacting sage-grouse populations in the bi-State area. Given the current level and location of harvest, and expected continued management into the future, we find the impact this factor has on population persistence is negligible. See the *Overutilization Impacts* section of the Species Report for further discussion (Service 2015a, pp. 99–105).

Scientific and Educational Uses

Mortality and behavioral impacts to sage-grouse may occur as a result of scientific research activities (Factor B). Sage-grouse in the bi-State area have been subject to several scientific research efforts over the past decade involving capture, handling, and subsequent banding or radio-marking. Much remains unknown about the impacts of research on sage-grouse population dynamics. However, the available information indicates that very few individuals are disturbed or die as a result of handling and marking. Therefore, we concluded in the proposed listing rule and reaffirm here that the potential impacts associated with scientific and educational uses are considered negligible to the bi-State DPS at this time and are expected to remain so into the future. See the *Scientific and Educational Uses* section of the Species Report for further discussion (Service 2015a, pp. 105–108).

Pesticides and Herbicides

Although few studies have examined the effects of pesticides to sage-grouse, direct mortality of sage-grouse as a result of pesticide applications (such as insecticides and pesticides applied via cropland spraying) has been documented (Blus *et al*. 1989, p. 1142; Blus and Connelly 1998, p. 23) (Factor E). In addition, herbicide applications can kill sagebrush and forbs important as food sources for sage-grouse (Carr 1968, as cited in Call and Maser 1985, p. 14) (Factor E). Although pesticides and herbicides can result in

direct and indirect mortality of individual sage-grouse, we are unaware of information that would indicate that the current usage or residue from past applications in the bi-State area are having negative impacts on populations, nor do we have information that indicates levels of use will increase in the future. Therefore, we concluded in the proposed listing rule and reaffirm here that the potential impacts associated with pesticide and herbicide use are considered negligible to the bi-State DPS at this time, and are expected to remain so into the future. See the *Pesticides and Herbicides* section of the Species Report for further discussion (Service 2015a, pp. 126–128).

Contaminants

Sage-grouse exposure to various types of environmental contaminants (concentrated salts, petroleum products, or other industrial chemicals) may occur as a result of agricultural and rangeland management practices, mining, energy development and pipeline operations, and transportation of hazardous materials along highways and railroads. In the bi-State area, exposure to contaminants associated with mining is the most likely to occur (see *Mining*, above). Exposure to contaminated water in wastewater pits or evaporation ponds could cause mortalities or an increased incidence of sage-grouse disease (morbidity) (Factor E). Within the bi-State DPS, sage-grouse exposure to potential contaminants is currently limited and most likely associated with a few existing mining operations in the Pine Nut and Mount Grant PMUs. Future impacts from contaminants (if present) would most likely occur in these same PMUs due to their potential for future mineral development; however, at this time we are unaware of

information to indicate that contaminants are a problem currently or in the future. Therefore, we concluded in the proposed listing rule and reaffirm here that the potential impacts associated with contaminants are considered negligible to the bi-State DPS at this time, and are expected to remain so into the future. See the *Contaminants* section of the Species Report for further discussion (Service 2015a, pp. 128–129).

Synergistic Impacts

Many of the impacts described here and in the accompanying Species Report may cumulatively or synergistically affect the bi-State DPS beyond the scope of each individual stressor. For example, the future loss of additional significant sagebrush habitat due to wildfire in the bi-State DPS is could occur because of the synergistic interactions among fire, people and infrastructure, invasive species, and climate change. Predation may also increase as a result of the increase in human disturbance and development. Conservation efforts that address the most significant threats to the bi-State DPS have continued to be implemented since publication of the proposed listing rule, including (but not limited to): removal of pinyon-juniper woodlands; reducing human-related disturbances in high-use recreation areas (e.g., installing sage-grouse educational signs); weed treatments for nonnative, invasive species; removing power lines; fencing around riparian areas to minimize grazing impacts; and implementing both permanent and seasonal road closures. With continued implementation of conservation actions associated with the BSAP (Bi-State TAC 2012a, entire), impacts from threats to

bi-State sage-grouse and their habitats are significantly reduced. Therefore, possible cumulative and/or synergistic effects of the various threats are also significantly reduced.

In summary, we have determined that the threats potentially causing the most significant impacts on the bi-State DPS currently and in the future are urbanization and habitat conversion (Factor A); infrastructure (Factors A and E); grazing (Factors A, C, and E); the increase of nonnative, invasive and native plants (e.g., cheatgrass, pinyon-juniper encroachment) (Factors A and E); wildfires and altered fire regime (Factors A and E); and small population size and population structure (Factor E). Other threats impacting the DPS across its range currently and in the future, but to a lesser degree than those listed above, include renewable energy development and associated infrastructure (Factors A and E); climate change, including drought (Factors A and E); recreation (Factors A and E); and disease and predation (Factor B). Numerous threats may be acting synergistically and cumulatively to further contribute to the challenges faced by several bi-State DPS populations now and into the future. Since the publication of the proposed listing rule, implementation of many conservation measures included in the BSAP that target the most significant threats to the bi-State DPS have reduced significantly the severity of threats – individually, cumulatively, and synergistically.

Existing Regulatory Mechanisms

Bi-State sage-grouse conservation has been addressed in some local, State, and Federal plans, laws, regulations, and policies. An examination of regulatory mechanisms

(Factor D) for both the bi-State DPS and sagebrush habitats in general reveals that some mechanisms exist that either provide or have the potential to provide a conservation benefit to the bi-State DPS, such as (but not limited to): Various county or city regulations outlined in general plans; Nevada State Executive Order, dated September 26, 2008; Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 *et seq*.), which requires development of resource management plans for BLM lands; the National Forest Management Act (16 U.S.C. 1600 *et seq*.), which requires Land and Resource Management Plans (LRMPs) for USFS lands; and the Sikes Act Improvement Act of 1997 (16 U.S.C. 670a *et seq*.), which requires integrated natural resources management plans for military installations (see *Existing Regulatory Mechanisms* section of the Species Report (Service 2015a, pp. 129–142)). However, supporting documents for some of these regulations are many years old and have not been updated, calling into question their consistency with our current understanding of the DPS's life-history requirements, and the DPS's conservation needs. In addition, the conservation actions that have been implemented to date according to the existing regulatory mechanisms vary across the bi-State area, although managing agencies are beginning to work more collaboratively across jurisdictional boundaries. The degree to which these existing regulatory mechanisms conserve the DPS is largely dependent on current and future implementation, which can vary depending on factors such as the availability of staff and funding.

Regulations in some counties identify the need for natural resource conservation and attempt to minimize impacts of development through zoning restrictions, but to our

knowledge these regulations neither preclude development nor do they provide for monitoring of the loss of sage-grouse habitats. Similarly, State laws and regulations are general in nature and provide flexibility in implementation, and do not provide specific direction to State wildlife agencies, although they can occasionally afford regulatory authority over habitat preservation (e.g., creation of habitat easements and land acquisitions).

The bi-State area is largely composed of federally managed lands. Historically, land use plans, as they pertain to sage-grouse, have been general in nature and afforded relatively broad latitude to land managers. The BLM (Carson City and Tonopah Field Offices) and USFS (Humboldt-Toiyabe National Forest) issued a Final Environmental Impact Statement in February, 2015 to support their respective proposed RMP and LRMP amendments. These proposed amendments include improved management direction that provide a conservation benefit for the bi-State DPS and its habitat (USDI and USDA 2015, entire). The proposed amendments identify goals for desired habitat condition at both the site and landscape scale. These goals and the specific direction needed to achieve them (e.g., grazing allotment management plans) direct management focus and funding to address specific habitat threats affecting the bi-State DPS (i.e., an increase in nonnative, invasive and native plants; wildfire and altered wildfire regime; and rangeland management) by improving habitat condition through increasing the resilience and resistance of the native sagebrush ecosystem. The proposed amendments also provide clear direction to managers faced with decisions on discretionary actions, such as infrastructure development projects, to consider the needs of sage-grouse in the

decision making process. The proposed amendments restrict the development of anthropogenic features in bi-State DPS habitat and thereby the potential risk these features can exert on sage-grouse in the future. We would like to further note that land use plan revisions are called for in the BSAP to improve regulatory effectiveness and consistency for discretionary agency actions affecting the bi-State DPS. The proposed amendments will make the plan language consistent with the BSAP goals, further reinforcing the commitments by the agencies to implement the plans, however we do not rely on the draft plans when analyzing the BSAP. See the discussion about the proposed Land Use Plan amendments in the detailed PECE analysis available on the Internet at *http://www.regulations.gov* (Docket No. FWS–R8–ES–2013–0072).

In our proposed rule, we stated that the existing regulatory mechanisms (Factor D) were not considered adequate to remove the threats such that listing under the Act would not be necessary. However, since that proposal, we have fully evaluated the BSAP and determined that it ameolirates threats to the species, lessening the need for regulatory mechanisms to manage stressors. The currently proposed BLM and Forest Service Land Use Plan amendments will provide more specificity and certainty with regard to the conservation of the bi-State DPS and its habitat. We mention the draft plans in this document to recognize that the BLM and the USFS have taken steps to draft such plans, which will make their language consistent with the actions being undertaken in the BSAP. However, we are not relying on them as part of this review because they are not finalized and would require speculation on the Service's part as to the final outcomes of the plans. Since we have determined that the ongoing and future conservation efforts

under the BSAP are removing the threats to the bi-State DPS as discussed above, we find that the currently existing regulatory mechanisms are adequate.

Ongoing and Future Conservation Efforts

Below we summarize the current plan that provides conservation benefit to the bi-State DPS, i.e., the BSAP (Bi-State TAC 2012a, entire). We describe the significant conservation efforts that are already occurring and those that are expected to occur in the future. For future conservation efforts (i.e., projects that have been initiated but are not yet complete or have not yet been shown to be effective or projects that are proposed for the future), we present an analysis pursuant to our Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE) (68 FR 15100; March 28, 2003).

Prior to the bi-State DPS becoming a candidate species in 2010, a variety of conservation initiatives were put in place to conserve the DPS and its habitat. The most significant initiative was the creation of the *Nevada Governor's Sage Grouse Conservation Team* in June 2002 who, in cooperation with local stakeholders (i.e., the Bi-State Local Area Working Group (LAWG)), developed the first edition of the Greater Sage Grouse Conservation Plan for the bi-State area in 2004 (Bi-State Local Planning Group 2004, entire) to begin a cooperative effort to address threats to the bi-State DPS and its habitat. The 2004 Action Plan served as the foundation for the conservation of the bi-State DPS and its habitat. These efforts were later enhanced by both local- and national-level conservation strategies for sage-grouse conservation (including in the Bi-

State area) associated with organizations including the Sage Grouse Initiative, and the Bi-State LAWG, the latter of which is specifically focused on bi-State DPS conservation.

In December 2011, the Bi-State Executive Oversight Committee (EOC) was formed (as recommended at that time by Ken Mayer (NDOW) and Raul Moralez (BLM)) to leverage collective resources and assemble the best technical support to achieve long-term conservation of the bi-State DPS and its habitat. The EOC comprises resource agency representatives from the Service, BLM, USFS, Natural Resources Conservation Service (NRCS), USGS, NDOW, and CDFW. Recognizing that conservation efforts were already underway by this point in time, the EOC directed a bi-State TAC, comprising technical experts/members from each agency, to summarize the conservation actions completed since 2004, and to develop a comprehensive set of strategies, objectives, and actions that would be effective for the long-term conservation of the bi-State DPS and its habitat. These strategies, objectives, and actions comprise the 2012 BSAP (Bi-State TAC 2012a, entire), which is actively being implemented by the signatory agencies identified above, as well as Mono County, who is committed to implementing all relevant actions within the county (which harbors the two core populations of the bi-State DPS). Numerous conservation efforts outlined in the BSAP have already been implemented (see the proposed listing rule (78 FR 64358) and sections 2.2 and 2.3 of the Action Plan (Bi-State TAC 2012a, pp. 4–13)). Additional conservation actions have been implemented since the plan was signed between 2012 and the present. For a comprehensive discussion of past and ongoing management efforts implemented according to the BSAP, see the *Past and Ongoing Management Efforts* discussion in the

Species Report (Service 2015a, pp. 36–43), and available on the Internet at *http://www.regulations.gov* (Docket No. FWS–R8–ES–2013–0072).

Despite the positive accomplishments of various entities implementing the 2012 BSAP, the proposed rule (78 FR 64358; October 28, 2013) described several threats that were identified as interacting synergistically on the bi-State DPS and its habitat and resulting in increasingly fragmented habitat for this long-lived habitat specialist, specifically: urbanization and habitat conversion (Factor A); infrastructure (Factors A and E); mining (Factors A and E); renewable energy development and associated infrastructure (Factors A and E); grazing (Factors A, C, and E); the increase of nonnative, invasive and native plants (e.g., cheatgrass, pinyon-juniper encroachment) (Factors A and E); wildfires and altered fire regime (Factors A and E); and small population size and population structure (Factor E). Other threats described in the proposed listing rule that impact the DPS across its range to a lesser degree than those listed above included: climate change, including drought (Factors A and E); recreation (Factors A and E); and disease and predation (Factor B) (78 FR 64358). Synergistic, cumulative impacts identified in the proposed rule primarily involved: (1) Woodland encroachment; (2) existing and potential near-term impacts of cheatgrass and wildfire that will likely escalate further with climate change; and (3) impacts from infrastructure, urbanization, and recreation on already fragmented habitat and small populations (78 FR 64358).

Based on information provided in the proposed rule and discussions with the EOC, TAC, and LAWG, signatory agencies provided a package of information

examining their commitments, including staffing and funding, to implement the actions needed for conservation of the bi-State DPS and its habitat, as outlined in the BSAP. They also provided an updated prioritization of various conservation actions and site-specific locations in which to implement such actions, as needed, based on utilization of the CPT (i.e., linked, data-driven predictive models and interactive maps that identify and rank areas for management actions and provide a basis to evaluate those actions) and the BSAP's Adaptive Management Strategy (Bi-State EOC 2014, *in litt.*). The agency commitment letters (which were one component of the information provided by the EOC, i.e. BLM 2014c, *in litt.*; CDFW 2014b, *in litt.*; Mono County 2014, *in litt.*; NDOW 2014b, *in litt.*; USDA 2014, *in litt.*; and USGS 2014c, *in litt.*) outlined many partially completed or new conservation actions that will be implemented and completed to address the threats that were identified in our October 28, 2013, proposed rule (78 FR 64538).

The EOC evaluated the [then current] bi-State DPS survey and trend information and concluded that their unified and collaborative approach addresses the conservation needs of the bi-State DPS (Bi-State EOC 2014, *in litt.*). Additionally, the EOC concluded that each partner agency is committed to implementing the BSAP and providing the necessary resources to do so regardless of the outcome of the Service's listing decision (Bi-State EOC 2014, *in litt.*).

The information provided by the EOC indicates significant conservation efforts are currently being implemented and further actions are proposed for implementation in

the future. These combined actions address the threats that (synergistically) are resulting in the most severe impacts on the DPS and its habitat now and into the future. These conservation actions are described in our detailed PECE analysis that is available on the Internet at *http://www.regulations.gov* (Docket No. FWS–R8–ES–2013–0072) and summarized below.

Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)

The purpose of PECE (68 FR 15100; March 28, 2003) is to ensure consistent and adequate evaluation of recently formalized conservation efforts when making listing decisions. The policy provides guidance on how to evaluate conservation efforts that have not yet been implemented or have not yet demonstrated effectiveness. The evaluation focuses on the certainty that the conservation efforts will be implemented and the effectiveness of the conservation efforts to contribute to make listing a species unnecessary. The policy presents nine criteria for evaluating the certainty of implementation and six criteria for evaluating the certainty of effectiveness for conservation efforts. These criteria are not considered comprehensive evaluation criteria. The certainty of implementation and the effectiveness of a formalized conservation effort may also depend on species-specific, habitat-specific, location-specific, and effort-specific factors. We consider all appropriate factors in evaluating formalized conservation efforts. The specific circumstances will also determine the amount of information necessary to satisfy these criteria.

To consider that a formalized conservation effort contributes to forming a basis for not listing a species, or listing a species as threatened rather than endangered, we must find that the conservation effort is sufficiently certain to be (1) implemented, and (2) effective, so as to have contributed to the elimination or adequate reduction of one or more threats to the species identified through section 4(a)(1) analysis under the Act. The elimination or adequate reduction of section 4(a)(1) threats may lead to a determination that the species does not meet the definition of threatened or endangered, or is threatened rather than endangered.

An agreement or plan may contain numerous conservation efforts, not all of which are sufficiently certain to be implemented and effective. Those conservation efforts that are not sufficiently certain to be implemented and effective cannot contribute to a determination that listing is unnecessary, or a determination to list as threatened rather than endangered. Regardless of the adoption of a conservation agreement or plan, however, if the best available scientific and commercial data indicate that the species meets the definition of "endangered species" or "threatened species" on the day of the listing decision, then we must proceed with appropriate rulemaking activity under section 4 of the Act. Further, it is important to note that a conservation plan is not required to have absolute certainty of implementation and effectiveness in order to contribute to a listing determination. Rather, we need to be reasonably certain that the conservation efforts will be implemented and effective such that the threats to the species are reduced or eliminated.

Using the criteria in PECE (68 FR 15100, March 28, 2003), we evaluated the certainty of implementation (for those measures not already implemented) and effectiveness of conservation measures in the BSAP. Below is a summary of our full PECE analysis, which can be found at *http://www.regulations.gov* (Docket No. FWS–R8–ES–2013–0072).

We have determined that the conservation efforts in the BSAP meet the PECE criteria with regard to certainty of implementation because of (but not limited to): (1) The agency commitments of staffing and significant funding (i.e., over $45 million over the next 10 years); and (2) continued participation on the Bi-State EOC, TAC, and LAWG to ensure the most important conservation efforts are occurring at any given time considering ongoing research and monitoring that may influence changes in management strategies, as outlined in the BSAP's Science-based Adaptive Management Plan and through use of the CPT. Additionally, we have certainty of implementation by the various agencies for conservation efforts that address many different impacts. In particular, we have certainty of implementation for those conservation efforts expected to provide the most significant conservation value to the bi-State DPS and its habitat, including actions (as outlined in the agencies 2014 commitment letters and work plans, and the comprehensive project database (Bi-State TAC 2014a, *in litt.*) that:

(1) Protect and restore critical brood-rearing habitat (reduces impacts from development/habitat conversion, grazing and rangeland management, and effects resulting from climate change). Lead agencies under the BSAP implementing

conservation actions to reduce these impacts are NRCS (e.g., conservation easements, riparian/meadow restoration), USFS (e.g., private-public land exchanges, riparian/meadow restoration or improvement, grazing management, wild horse management), BLM (e.g., riparian/meadow restoration, meadow irrigation and structure repair, racetrack fence removal, wild horse management), and Mono County (e.g., fencing modification).

(2) Restore habitat impacted by the spread of invasive, nonnative plants and pinyon-juniper encroachment (reduces impacts from nonnative, invasive and certain native plants, wildfire, predation, and effects resulting from climate change). Lead agencies under the BSAP implementing conservation actions to reduce these impacts are NRCS (e.g., pinyon-juniper removal), USFS (e.g., pinyon-juniper removal, riparian/meadow restoration, invasive weed treatments), BLM (e.g., pinyon-juniper removal, riparian/meadow restoration, invasive weed treatments, wildfire fuel break treatments, fencing removal), and Mono County (e.g., closure and relocation of the Long Valley landfill, predator deterrents and reduction of attractants).

(3) Ensure stable or increasing sage-grouse populations and structure, etc., to (a) Prioritize management actions related to synergistic impacts on already fragmented habitat, such that management efforts occur in locations that benefit the DPS the most (reducing impacts such as infrastructure, urbanization, and recreation), and (b) develop and implement sage-grouse translocation from stable subpopulations to other small subpopulations that may be experiencing a high risk of extirpation (reduces impacts from small population size and population structure). Lead agencies under the BSAP implementing conservation actions to reduce these impacts are USGS, NDOW, and

CDFW (e.g., conducting telemetry, research, or monitoring surveys that inform the CPT of adjustments to the BSAP conservation strategy that provide the greatest benefit to the DPS or its habitat (see section 6.5 in the BSAP (Bi-State TAC 2012a, pp.75–76); implementing translocation programs from stable subpopulations to subpopulations that may be at high risk of extinction), BLM (e.g., permanent and seasonal road closures, nesting habitat seasonal closures, fencing removal or marking), USFS (e.g., permanent and seasonal road closures, power line removal), and Mono County (coordinate with private landowners to encourage reduced infrastructure).

We also note that BLM, USFS, NRCS, and Mono County have provided specific plans and timetables laying out various conservation efforts for implementation over the next 10 years (BLM 2014c, *in litt.*; Mono County 2014, *in litt.*; USDA 2014, *in litt.*), while CDFW, NDOW, and USGS have provided textual descriptions of their intended actions and contributions over the next 10 years (CDFW 2014b, *in litt.*; NDOW 2014b, *in litt.*; USGS 2014c, *in litt.*). Additionally, the collaboration between the Service, BLM, USFS, NRCS, Mono County, USGS, NDOW, and CDFW requires regular meetings and involvement from the parties, whether at the level of the Bi-State EOC, TAC, or LAWG, in order to implement the BSAP fully.

We are confident that the conservation efforts (as outlined in the BSAP, Agency commitment letters, and our detailed PECE analysis (all of which are available at *http://www.regulations.gov* (Docket No. FWS–R8–ES–2013–0072)), as well as the TAC comprehensive project database) will continue to be implemented because (to date) we

have a documented track record of active participation and implementation by the signatory agencies, and commitments to continue implementation into the future. Conservation measures, such as (but not limited to) pinyon-juniper removal, establishment of conservation easements for critical brood-rearing habitat, cheatgrass removal, permanent and seasonal closure of roads near leks, removal and marking of fencing, and restoration of riparian/meadow habitat have been occurring over the past decade, are currently occurring, and have been prioritized and placed on the agency's implementation schedules for future implementation. Agencies have committed to remain participants and continue conservation of the DPS and its habitat. The BSAP has sufficient methods (i.e., science advisors, the CPT, and a Science-based Adaptive Management Strategy) for determining the type and location of the most beneficial conservation actions to be implemented, including continued receipt of new population and threats information in the future that will guide conservation efforts.

We have determined that the conservation efforts in the BSAP meet the PECE criteria with regard to certainty of effectiveness to remove or reduce threats facing the bi-State DPS because of, but not limited to, past project effectiveness within the bi-State area or within sagebrush habitat areas across the range of the greater sage-grouse, and documented effective methodologies for addressing the threats identified as impacting the bi-State DPS. For example (Bi-State EOC 2014, *in litt.*; Espinosa 2014, *in litt.*):

(1) Development and Habitat Conversion—Conservation efforts to reduce development and habitat conversion are anticipated to occur in critical brood-rearing

habitats across five PMUs, including through conservation easements and land exchanges (see detailed PECE analysis, Section 3.0). These areas include high-priority targets identified in the BSAP, and are consistent with the Conservation Objectives Team (COT) Report's ex-urban conservation objective to limit urban and exurban development in sage-grouse habitats (Service 2013c, p. 50). These actions are considered effective at reducing impacts from development and habitat conversion because conserving and managing lands in perpetuity are the most successful tools for permanent protection of critical sage-grouse habitat (as demonstrated by Pocewicz *et al.* (2011) in Wyoming).

(2) Invasive Nonnative and Native Plants—Because both invasive plants and particularly native plants (pinyon-juniper encroachment) displace the sagebrush ecosystem that the bi-State DPS relies on, significant conservation efforts are being and will continue to be implemented to address these problems. With regard to invasive, nonnative plants, the Bi-State EOC and TAC recognize that effective control programs can be labor intensive and costly; however, the Bi-State EOC and TAC believes there is value for the bi-State DPS in being strategic in implementing the conservation efforts that potentially reduce the impact these plants have on the DPS's habitat (e.g., treating nonnative, invasive plants in strategic areas to potentially reduce the likelihood of an outbreak or improve a priority habitat area) (Espinosa 2014, *in litt.*). Six BLM and USFS projects are either partially completed or planned for the future that target invasive, nonnative plants on more than 257 ha (634 ac) in the Desert Creek-Fales, Mount Grant, and Pine Nut PMUs, the latter two of which cheatgrass is considered a moderate and high threat, respectively, compared to other PMUs. The USFS will control at least 40.5 ha

(100 ac) of cheatgrass each year over the next 10 years in the Pine Nut PMU (USDA 2014, *in litt.*). Finally, adjustments to grazing and upland habitats, when necessary, can reduce the risk of cheatgrass dominance on a site.

With regard to pinyon-juniper encroachment, ecologists have developed clear and effective recommendations to target appropriate phases of encroachment (i.e., specific age and density structure) to ensure restoration occurs in sagebrush and sage-grouse habitat areas that are most meaningful (e.g., critical brood-rearing habitat, corridors in fragmented areas) (e.g., Bates *et al.* 2011, pp. 476–479; Davies *et al.* 2011, pp. 2577–2578). Accordingly, BLM, USFS, and NRCS are strategically targeting phase I and II pinyon-juniper encroachment in the bi-State area, which is supported by literature as effective with careful planning and execution (e.g., Bates *et al.* 2011, pp. 476–479; Davies *et al.* 2011, pp. 2577–2578). At this time, approximately 82,284 ha (203,329 ac) across all PMUs are identified by the Bi-State TAC to be examined and treated for pinyon-juniper encroachment (Bi-State TAC 2014a, *in litt.*).

(3) Infrastructure—Conservation efforts to reduce infrastructure are focused on roads, power lines, fencing, and a landfill. Permanent road closures over a minimum of 1,339 km (832 mi) in the Bodie, Desert Creek-Fales, Mount Grant, and Pine Nut PMUs and seasonal road closures over approximately 1,429 km (888 mi) in the South Mono PMU will reduce the likelihood of mortality and improve vital rates for sage-grouse near leks, including nesting and brood-rearing areas (Bi-State TAC 2014a, *in litt.*). Power line and fencing removal projects will occur at three sites in the Bodie or South Mono PMUs,

in addition to three projects that will mark and modify fencing in the Pine Nut or South Mono PMUs (Bi-State TAC 2014a, *in litt.*). A landfill in the Long Valley area of the South Mono PMU is a significant source of predators for one of the two core populations of the bi-State DPS; Mono County is currently undergoing the initial stages of closing and relocating this landfill (Bi-State TAC 2014a, *in litt.*; Mono County 2014, *in litt.*).

Removing or modifying the types of infrastructure described above will be effective at reducing the amount of invasive plants present along or around developed areas (Manier *et al.* 2014, pp. 167–170), reducing existing habitat fragmentation and potential vectors for invasive plants (Gelbard and Belnap 2003, pp. 424–431); removing some edge effects that can lead to avoidance of nesting in suitable habitat areas (Aldridge and Boyce 2007, pp. 516523); reducing or removing anthropogenic noise that disturbs normal behavior patterns of sage-grouse (Blickley 2013, pp. 54–65); reducing collision-related mortalities (associated specifically with fencing) (Stevens *et al.* 2012, pp. 299–302); and making currently undesirable habitat areas (that attract predators) favorable by sage-grouse as nest and brood sites by reducing predator attractants (e.g., power lines, landfill) (Dinkins *et al.* 2012, pp. 605–608).

(4) Wildfire—Fires have consumed some important habitat areas within the range of the bi-State DPS, primarily within the Pine Nut PMU, but also recently as a result of the Spring Peak fire within the Bodie and Mount Grant PMUs (Espinosa 2014, *in litt.*). Site restoration activities are planned to be implemented following wildfires by utilizing the CPT to identify sites that are the best candidates for enhancing or returning sagebrush

habitats to conditions that benefit sage-grouse (Espinosa 2014, *in litt.*). Restoration efforts will be tracked for success, noting that some actions (e.g., seeding) vary in success rate, given variables such as elevation, precipitation, and site-conditions prior to a fire (Espinosa 2014, *in litt.*). Recovery of functional sagebrush habitats following wildfire and restoration actions can take decades (potentially several sage-grouse generations) to be realized, and requires monitoring to assure conservation objectives are met (such as ensuring appropriate levels of sagebrush and native herbs are established, and reducing nonnative plant dominance) (Arkle *et al.* 2014, p. 17). Additionally, the Bi-State TAC currently utilizes the CPT and field reconnaissance to maximize the likelihood of enhancing the desired sagebrush community composition post-fuels reduction treatment activities (Espinosa 2014, *in litt.*). See the discussion above regarding "Nonnative, Invasive and Native Plants" for activities currently occurring or planned for the future to help reduce the existing fuel loads that promote wildfires.

(5) Small Population Size and Population Structure—The BSAP specifically identifies a strategy (MER7) to address small population size issues in the bi-State area, by identifying potential sage-grouse population augmentation and reintroduction sites, developing translocation guidelines, and potentially implementing augmentation and reintroduction efforts (Bi-State TAC 2012a, p. 93). Specific actions include developing contingency plans for the Parker Meadows and Gaspipe Spring subpopulations in the South Mono PMU, and populations in the Pine Nut PMU; and evaluating the need for augmentation for the Fales population of the Desert Creek-Fales PMU, the Powel Mountain area of the Mount Grant PMU, the McBride Flat/Sagehen Spring area in the

Truman Meadows portion of the White Mountains PMU, and Coyote Flat of the South Mono PMU.

Prior to conducting translocation efforts, the Bi-State TAC and LAWG must concentrate significant efforts in conducting lek counts and surveys, and developing a standardized sage-grouse monitoring program throughout the bi-State area (CDFW 2014b, *in litt.*). These initial activities do not directly reduce any threats, although they are important to ensure effectiveness of many conservation efforts, particularly translocation efforts. Currently, CDFW is developing a plan to translocate sage-grouse from stable subpopulations in the bi-State area to the Parker Meadows subpopulation (Bi-State TAC 2014a, *in litt*.; CDFW 2014b, *in litt.*). Efforts on this current action are directly relevant to future conservation efforts for other unstable subpopulations. It is reasonable to assume future translocations in the bi-State area have a high likelihood of effectiveness given careful consideration to all the variables (including translocation that would occur concurrent with other threat reduction activities, such as predator control), and published literature that indicates success of translocated sage-grouse when successful translocation methodology is followed (Musil *et al.* 1993, pp. 89–90; Reese and Connelly 1997, pp. 239–240; Hennefer 2007, pp. 33–37; Baxter *et al.* 2008, pp. 184–185).

We will have an ongoing role in monitoring the implementation and effectiveness of the partially completed and future conservation efforts given our regular participation with the Bi-State EOC, TAC, and LAWG, participation in providing updated versions of

the BSAP, and by reviewing any monitoring and research reports. We are satisfied that the conservation efforts evaluated will be effective in reducing threats to the bi-State DPS and its habitat; however, in order to do so they do not need to be applied on every acre of suitable and unsuitable sage-grouse habitat. For instance, not all of the native pinyon-juniper vegetation needs to be removed, such as in areas within the range of the bi-State DPS where pinyon-juniper historically occurred. Rather the effort needs, and is expected, to be implemented in areas that are most likely to support sage-grouse (post-removal) and critical areas that address habitat fragmentation or reduced-connectivity issues. These efforts need to occur at a rate that significantly reduces further habitat losses, which is consistent with the objective to address pinyon-juniper expansion provided in the March 22, 2013, COT Report for conservation of the greater sage-grouse (Service 2013c, pp. 47–48), including the bi-State DPS.

We have determined that the agencies resource commitments (e.g., staffing and funding, including more than $45 million over the next 10 years), and a demonstrated record of implementation will ensure continued conservation of habitat for the bi-State DPS. The BSAP has sufficient monitoring and reporting requirements to ensure that the proposed future conservation measures are implemented as planned, and are effective at removing threats to the DPS and its habitat. The collaboration between the Service, BLM, USFS, NRCS, Mono County, USGS, and the States of Nevada and California requires regular team meetings (Bi-State EOC, TAC, and EOC), and continued involvement of all parties will occur (Bi-State EOC 2014, *in litt.*) in order to implement the BSAP fully. We find that the future conservation efforts in the BSAP meet the PECE

criteria for certainty of implementation and effectiveness, and can be considered as part of the basis for our final listing determination for the bi-State DPS.

In conclusion, we find that the conservation efforts in the BSAP, and as outlined in the agencies' June 2014 commitment letters, meet the PECE criteria with regard to certainty of implementation (for those measures not already implemented) and effectiveness and can be considered as part of the basis for our final listing determination for the bi-State DPS. Our full analysis of the 2012 BSAP ,and additional materials submitted to the Service as mentioned above, pursuant to PECEcan be found at *http://www.regulations.gov* (Docket No. FWS–R8–ES–2013–0072).

Determination

As required by the Act, we considered the five factors listed in section 4(a)(1)(b) of the Act in assessing whether the bi-State DPS of greater sage-grouse meets the definition of a threatened or endangered species. We examined the best scientific and commercial information available regarding the past, present, and foreseeable future threats faced by the DPS. For the purposes of this determination, we consider foreseeable future to be 30 years based on the probability of population persistence analyzed and described by Garton *et al.* (2011, entire), and based on the time horizons for which the various threats can be reliably projected into the future (as described under the various threats analysis discussions in the Species Report (Service 2015a, pp. 45–142)).

Based on our review of the best available scientific and commercial information, we find that the current threats are not of sufficient imminence, intensity, or magnitude to indicate that the bi-State DPS is in danger of extinction (endangered). In our proposed listing rule we determined that the bi-State DPS is likely to become endangered within the foreseeable future (threatened). However, after consideration of new information regarding partially completed and ongoing conservation measures and planned future conservation efforts that we conclude will be implemented and effective (as described in our detailed PECE analysis available at *www.regulations.gov*, Docket No. FWS–R8–ES–2013–0072), we now conclude that the bi-State DPS is not likely to become endangered within the foreseeable future (threatened), throughout all or a significant portion of its range (see **Significant Portion of the Range**, below). Therefore, the bi-State DPS of greater sage-grouse does not meet the definition of a threatened or endangered species, and we are withdrawing the proposed rule to list the DPS as a threatened species. Our rationale for this finding is outlined below.

The best available information indicates that the current overall sage-grouse population trend across the DPS is stable, and likely to improve based on the implementation and effectiveness of ongoing and future conservation actions associated with the BSAP. The likelihood of persistence of viable populations of both core PMUs (according to species experts) is considered high for the two largest (core) populations that comprise greater than 67 percent of all strutting males (Service 2015a, Table 1; CDFW 2014a, unpublished data; NDOW 2014a, unpublished data). Additionally, all

populations or subpopulations across the six PMUs have persisted as viable populations in their current distribution in spite of many stressors.

Ongoing and future conservation efforts are likely to increase habitat quantity, quality, and connectivity. This will likely increase the number of sage-grouse and resilience of the bi-State DPS overall. These efforts to stop and reverse habitat loss and fragmentation will make small populations of bi-State sage-grouse less susceptible to the effects of habitat loss, degradation, and fragmentation. These efforts will expand the amount of protected habitat in critical brood-rearing habitat areas as well as restore currently unsuitable habitat in areas utilized for dispersal and colonization. These measures are expected to increase resilience to possible future random, stochastic events or impacts. Further, the DPS's current distribution encompasses and is representative of the genetic diversity known to exist across the range of the DPS. As such, the sage-grouse within this DPS: (1) Are widely distributed such that the DPS as a whole is well-protected from stochastic events, and (2) the DPS spans the known genetic diversity such that the populations are not in danger of a genetic bottleneck. We expect the DPS to continue to remain viable throughout its current overall distribution. We also expect that ongoing and planned conservation efforts will improve habitat quality and quantity and allow the populations to expand. Thus, we conclude that the bi-State DPS will have sufficient resiliency, redundancy, and representation such that it does not meet the definition of a threatened or endangered species under the Act.

Since publication of our proposed listing rule (78 FR 64358; October 28, 2014), new information (e.g., survey data, habitat conditions, trends analysis, and Bi-State EOC commitments) has become available and additional conservation efforts have been implemented to help further our understanding of the DPS's abundance, habitat trends, and overall status across its range. New information received has resulted in:

(1) Corrections or clarifications of miscellaneous life-history information (see *Species Information* above and the **Biological Information** section of the Species Report (Service 2015a, pp. 7–33)).

(2) A more accurate assessment of suitable habitat throughout the bi-State area (see Service 2015a, p. 18).

(3) A more accurate assessment of population trends in the bi-State area (see *Species Information* above and *Current Range/Distribution and Population Estimates/Annual Lek Counts* section of the Species Report (Service 2015a, pp. 17–31)).

Without the conservation measures being implemented now and planned for the future as described in the BSAP, the stressors that rise to a level of being a threat as identified in the proposed rule to the bi-State DPS would remain at a level that would warrant listing of the DPS as a threatened species. However, based primarily on information received from the action agencies implementing the BSAP, including commitments of funding and other resources, we are able to utilize the PECE policy to evaluate conservation actions that are either implemented and not yet shown to be effective and those proposed for the future.

As outlined in the **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section above, we evaluated the certainty of implementation and effectiveness of the BSAP's ongoing and future conservation efforts pertaining to the bi-State DPS. We have determined that the agencies implementing this plan (i.e., the BLM, USFS, NRCS, USGS, Mono County, NDOW, and CDFW) are committed to and will continue conservation efforts into the future to benefit the bi-State DPS and its habitat. The BSAP also has sufficient monitoring and reporting requirements to ensure that the proposed future conservation measures are implemented as planned, and are effective at reducing or ameliorating stressors such that they are no longer a threat to the DPS and its habitat. As a result, we find that the future conservation efforts in the BSAP meet the PECE criteria for certainty of implementation and effectiveness, and can be considered as part of the basis for our final listing determination for the bi-State DPS.

Since the time of our proposed listing, the BSAP signatory agencies, in cooperation with the Bi-State EOC, TAC, and LAWG, have made significant efforts to develop and refine (through adaptive management and utilization of the CPT) work plans for the next 10 years to implement conservation efforts targeted at the most important current and future conservation needs within the DPS (BLM 2014c, *in litt.*; CDFW 2014b, *in litt.*; Espinosa 2014, *in litt.*; Mono County 2014, *in litt.*; NDOW 2014b, *in litt.*; USDA 2014, *in litt.*; USGS 2014c, *in litt.*). These conservation efforts are focused on:

(1) Protecting and restoring critical brood-rearing habitat (reduces impacts from development/habitat conversion, grazing and rangeland management, and effects resulting from climate change).

(2) Restoring habitat impacted by nonnative, invasive species (e.g., cheatgrass) and pinyon-juniper encroachment (reduces impacts from nonnative, invasive and certain native plants, wildfire, predation, and effects resulting from climate change).

(3) Improving our understanding of sage-grouse populations, structure, etc., to: (a) Prioritize management actions related to synergistic impacts on already fragmented habitat (reduced impacts such as infrastructure, urbanization, and recreation), such that management efforts occur in locations that benefit the DPS the most; and (b) develop and implement sage-grouse translocations from stable subpopulations to other small subpopulations that may be experiencing a high risk of extirpation (reduces impacts from small population size and population structure).

We find that by concentrating BSAP conservation efforts on the threats that are cumulatively and synergistically having the greatest impact on the bi-State DPS and its habitat, these efforts have reduced impacts, and will continue to reduce the magnitude of impacts in the foreseeable future such that the DPS no longer meets the definition of a threatened or endangered species. Some of the conservation efforts that will be implemented to address these most significant concerns include (but are not limited to):

(1) Establishing conservation easements, private-public land exchanges, or land acquisitions within the Pine Nut, Bodie, Desert Creek-Fales, Mt. Grant, and South Mono PMUs, including a minimum of approximately 3,875 ha (9,576 ac) of conservation

easements containing critical sage-grouse brood-rearing habitat, and a minimum of approximately 1,325 ha (3,274 ac) of private-public land exchanges (Bi-State TAC 2014a, *in litt.*; CDFW 2014b, *in litt.*; Mono County 2014, *in litt.*; USDA 2014, *in litt.*).

(2) Evaluating 82,284 (ha) (203,329 ac) of habitat throughout all six PMUs for potential treatment to reduce pinyon-juniper encroachment (Bi-State TAC 2014a, *in litt*.). This is being accomplished by using the CPT, thereby concentrating habitat restoration efforts in areas throughout the DPS's range that would be most beneficial to the DPS and most effective on-the-ground (e.g., avoiding areas that birds are not likely to utilize, focusing on areas that reduce habitat fragmentation in corridor areas). These conservation efforts not only address encroachment of pinyon-juniper (and loss of sagebrush habitat), but they also reduce predation impacts (i.e., removal of predator perches) and wildfire impacts associated with fuels accumulation (given that infrequent fires facilitate conifer encroachment and too frequent fires promote invasive, nonnative annual grasses).

(3) Implementing new grazing standards on all allotments that address grazing and wild horse management issues (BLM 2014c, *in litt.*; USDA 2014, *in litt.*; Bi-State TAC 2014a, *in litt.*). Conservation efforts include (but are not limited to) improving water facilities, restoring meadow habitat, and improving fence conditions across multiple PMUs.

(4) Identifying and implementing sage-grouse population augmentation and reintroduction sites, developing translocation guidelines, and potentially implementing augmentation and reintroduction efforts (Bi-State TAC 2012a, p. 93). Specific actions include developing contingency plans for the Parker Meadows and Gaspipe Spring

subpopulations in the South Mono PMU, and populations in the Pine Nut PMU; and evaluating the need for augmentation for the Fales population of the Desert Creek-Fales PMU, the Powel Mountain area of the Mount Grant PMU, the McBride Flat/Sagehen Spring area in the Truman Meadows portion of the White Mountains PMU, and Coyote Flat of the South Mono PMU. At this time, efforts are specifically under way and focused on developing a translocation plan for the Parker Meadows subpopulation (CDFG 2014, *in litt.*; Bi-State TAC 2014a, *in litt.*).

Additional details on partially completed projects and future conservation efforts are outlined in the Agency's June 2014 commitment letters and workplans (BLM 2014c, *in litt.*; CDFW 2014b, *in litt.*; Mono County 2014, *in litt.*; NDOW 2014b, *in litt.*; USDA 2014, *in litt.*; USGS 2014c, *in litt.*), the Bi-State TAC comprehensive project database (Bi-State TAC 2014a, *in litt.*), and our detailed PECE analysis, all of which are available at *http://www.regulations.gov*, Docket No. FWS–R8–ES–2013–0072.

Of greatest significance and note (since publication of the proposed listing rule), the BSAP recognized 79 projects and the need for $38 million over a 10-year period to address immediate conservation needs of the bi-State DPS and its habitat (Bi-State TAC 2014b, *in litt*.). At this time, all of those projects are either being implemented (currently underway) or will be implemented in the future. A total of $45 million has been pledged by the agencies with a high level of certainty of both implementation and effectiveness, which exceeds the $38 million estimated/called for by the BSAP.

Overall, the partially completed and future conservation efforts (i.e., those identified in the 10-year work plans and utilized in the Bi-State TAC's comprehensive project database (Bi-State TAC 2014a, *in litt.*)) have been designed to address current and expected future synergistic impacts. Although the majority of the conservation efforts will address the most significant impacts synergistically impacting the DPS (i.e., woodland encroachment, infrastructure, urbanization, recreation, and existing and potential near-term impacts of cheatgrass and wildfire that may potentially escalate climate change in the future), some of the partially completed and future conservation efforts are addressing less significant (overall) impacts (e.g., WNv surveillance and mosquito abatement (disease), human disturbance to leks associated with existing renewable energy and geothermal sites). Examples of how the partially completed and future conservation actions will continue to reduce threats include:

(1) Permanent protection (primarily through NRCS efforts) of sage-grouse habitat within the Pine Nut, Bodie, Desert Creek-Fales, Mt. Grant, and South Mono PMUs, including at least approximately 3,875 ha (9,576 ac) of conservation easements containing critical sage-grouse brood-rearing habitat, and at least approximately 1,325 ha (3,274 ac) of private-public land exchanges (Bi-State TAC 2014a, *in litt.*). These conservation measures reduce the threat of losing this important habitat to urbanization and development, and any associated infrastructure (Factor A).

(2) Reduction of grazing impacts by BLM and USFS, such as repairing watering sites in the Bodie PMU, maintaining or restoring riparian/meadow sites impacted by grazing animals across multiple PMUs, and removing racetrack fencing or marking/modifying fencing (Bi-State TAC 2014a, *in litt.*). These conservation measures

reduce the threats of grazing-related impacts, including (but not limited to) reduced sage-brush habitat quality, reduced nesting and reproductive success, and reduced food availability (Factor A). Conservation efforts focused on water development can also reduce facilitating the spread of WNv (Factor C).

(3) Reduction of pinyon-juniper encroachment by BLM, USFS, and NRCS, including current evaluation of approximately 82,284 ha (203,329 ac) of Phase I or II areas (using the CPT) across all PMUs for prioritizing treatment areas (Bi-State TAC 2014a, *in litt.*). These conservation measures reduce the threat of habitat loss and fragmentation (Factor A), facilitated woodland encroachment (Factor A), and predation risks (Factor C).

(4) Implementation of six BLM and USFS projects that target invasive, nonnative plants on more than 257 ha (634 ac) in the Desert Creek-Fales, Mount Grant, and Pine Nut PMUs, the latter two of which cheatgrass is considered a moderate and high threat, respectively, compared to other PMUs. Additionally, the USFS will control at least 40.5 ha (100 ac) of cheatgrass each year over the next 10 years in the Pine Nut PMU (USDA 2014, *in litt.*). Adjustments to grazing in upland habitats, when necessary, are also likely to reduce the risk of cheatgrass dominance on sites. These conservation measures reduce the threat of habitat loss and fragmentation, and potentially the increased frequency of wildfires associated with cheatgrass and other invasives that can hamper recovery of sagebrush habitat (Factor A).

(5) Removal of a landfill in the Long Valley area of the South Mono PMU, which is a significant source of predators for one of the two core populations of the bi-State DPS. Mono County is currently undergoing the initial stages of relocating this landfill

(Bi-State TAC 2014a, *in litt.*; Mono County 2014, *in litt.*). This conservation measure reduces the threat of predation (Factor C).

(6) Permanent BLM and USFS road closures over a minimum of 1,339 km (832 mi) in the Bodie, Desert Creek-Fales, Mount Grant, and Pine Nut PMUs, and seasonal road closures over approximately 1,429 km (888 mi) in the South Mono PMU, which will reduce the likelihood of mortality and improve vital rates for sage-grouse near leks, including nesting and brood-rearing areas (Bi-State TAC 2014a, *in litt.*). These conservation measures reduce the threats of predation (Factor C) and loss of individuals associated with collisions (Factor E).

Please see our PECE analysis (section 3.0) for a detailed discussion of the nature and extent of threats addressed by the BSAP, which is available on the Internet at *www.regulations.gov* (Docket No. FWS–R8–ES–2013–0072).

An important aspect of the BSAP for reducing threats to the bi-State DPS and its habitat is the development and implementation of a Science-Based Adaptive Management Plan that includes the CPT, which: (1) includes data-driven predictive models and interactive maps that identify and rank areas that necessitate management action; and (2) provides a basis to evaluate those actions, all of which are focused on areas that are most meaningful for the bi-State DPS populations. The CPT is currently being used to inform which actions are most beneficial and in the best targeted locations (thus linking the outcome of management actions to the response of sage-grouse populations).

In summary, we conclude that the BSAP conservation efforts have sufficient certainty of implementation and effectiveness that they can be relied upon in this final listing determination. Further, we conclude that the BSAP reduces or eliminates current and future threats to the bi-State DPS and its habitat to the point that the species is no longer in danger of extinction now or in the foreseeable future. We conclude that the conservation efforts (including funding and staffing commitments) that are currently partially completed and those proposed for the future (as outlined in the agency's commitment letters (BLM 2014c, *in litt.*; CDFW 2014b, *in litt.*; Mono County 2014, *in litt.*; NDOW 2014b, *in litt.*; UDSA 2014, *in litt.*; USGS 2014c, *in litt.*) and the Bi-State TAC's active project database (Bi-State TAC 2014a, *in litt.*)) improve the status of the DPS and its habitat conditions to such a degree that the current level of impacts are significantly reduced (in other words, the DPS is not likely to be in danger of extinction

in the foreseeable future). Therefore, we are withdrawing our proposed rule to list the bi-State DPS as a threatened species, and consequently, we are also withdrawing the associated proposed 4(d) and critical habitat rules.

We will continue to monitor the status of the bi-State DPS through monitoring requirements in the BSAP, and our evaluation of any other information we receive. These monitoring requirements will not only inform us of the amount of bi-State DPS habitat conserved and reclaimed, but will also help inform us of the status of the populations. Additional information will continue to be accepted on all aspects of the bi-State DPS and its habitat. If at any time new information indicates that the provisions of the Act may be necessary to conserve the bi-State sage-grouse, we can initiate listing procedures, including, if appropriate, emergency listing pursuant to section 4(b)(7) of the Act. For example, we could initiate listing procedures if we become aware of declining implementation or participation in the BSAP, or noncompliance with the conservation measures, or if there are new threats or increasing stressors that rise to the level of a threat.

Significant Portion of the Range

Under the Act and our implementing regulations, a species may warrant listing if it is an endangered or a threatened species throughout all or a significant portion of its range. The Act defines "endangered species" as any species which is "in danger of extinction throughout all or a significant portion of its range," and "threatened species" as

any species which is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." The term "species" includes "any subspecies of fish or wildlife or plants, and any distinct population segment [DPS] of any species of vertebrate fish or wildlife which interbreeds when mature." We published a final policy interpreting the phrase "Significant Portion of its Range" (SPR) (79 FR 37578). The final policy states that (1) if a species is found to be an endangered or a threatened species throughout a significant portion of its range, the entire species is listed as an endangered or a threatened species, respectively, and the Act's protections apply to all individuals of the species wherever found; (2) a portion of the range of a species is "significant" if the species is not currently an endangered or a threatened species throughout all of its range, but the portion's contribution to the viability of the species is so important that, without the members in that portion, the species would be in danger of extinction, or likely to become so in the foreseeable future, throughout all of its range; (3) the range of a species is considered to be the general geographical area within which that species can be found at the time FWS or NMFS makes any particular status determination; and (4) if a vertebrate species is an endangered or a threatened species throughout an SPR, and the population in that significant portion is a valid DPS, we will list the DPS rather than the entire taxonomic species or subspecies.

The SPR policy is applied to all status determinations, including analyses for the purposes of making listing, delisting, and reclassification determinations. The procedure for analyzing whether any portion is an SPR is similar, regardless of the type of status determination we are making. The first step in our analysis of the status of a species is to

determine its status throughout all of its range. If we determine that the species is in danger of extinction, or likely to become so in the foreseeable future, throughout all of its range, we list the species as an endangered (or threatened) species and no SPR analysis will be required. If the species is neither an endangered nor a threatened species throughout all of its range, we determine whether the species is an endangered or a threatened species throughout a significant portion of its range. If it is, we list the species as an endangered or a threatened species, respectively; if it is not, we conclude that listing the species is not warranted.

When we conduct an SPR analysis, we first identify any portions of the species' range that warrant further consideration. The range of a species can theoretically be divided into portions in an infinite number of ways. However, there is no purpose to analyzing portions of the range that are not reasonably likely to be significant and either an endangered or a threatened species. To identify only those portions that warrant further consideration, we determine whether there is substantial information indicating that (1) the portions may be significant and (2) the species may be in danger of extinction in those portions or likely to become so within the foreseeable future. We emphasize that answering these questions in the affirmative is not a determination that the species is an endangered or a threatened species throughout a significant portion of its range—rather, it is a step in determining whether a more detailed analysis of the issue is required. In practice, a key part of this analysis is whether the threats are geographically concentrated in some way. If the threats to the species are affecting it uniformly throughout its range, no portion is likely to warrant further consideration. Moreover, if any concentration of

threats apply only to portions of the range that clearly do not meet the biologically based definition of "significant" (i.e., the loss of that portion clearly would not be expected to increase the vulnerability to extinction of the entire species), those portions will not warrant further consideration.

If we identify any portions that may be both (1) significant and (2) endangered or threatened, we engage in a more detailed analysis to determine whether these standards are indeed met. The identification of an SPR does not create a presumption, prejudgment, or other determination as to whether the species in that identified SPR is an endangered or a threatened species. We must go through a separate analysis to determine whether the species is an endangered or a threatened species in the SPR. While some of these impacts are more easily alleviated than others (e.g., conifer encroachment), the existing condition, if left unchecked, is likely to worsen in the future (Bi-State TAC 2012a, pp. 24–25).

Depending on the biology of the species, its range, and the threats it faces, it may be more efficient to address the "significant" question first, or the status question first. Thus, if we determine that a portion of the range is not "significant," we do not need to determine whether the species is an endangered or a threatened species there; if we determine that the species is not an endangered or a threatened species in a portion of its range, we do not need to determine if that portion is "significant."

Because we determined that the bi-State DPS is neither endangered nor threatened throughout all of its range following application of the PECE policy and as described above in the **Determination** section, we must next determine whether the bi-State DPS may be endangered or threatened in a significant portion of its range. To do this, we must first identify any portion of the DPS's range that may warrant consideration by determining whether there is *substantial information* indicating that: (1) The portions *may be* significant, and (2) the DPS *may be* in danger of extinction in those portions or is likely to become so within the foreseeable future. We note that a positive answer to these questions is not a determination that the DPS is endangered or threatened within a significant portion of its range, but rather a positive answer to these questions confirms whether a more detailed analysis is necessary.

Given the Pine Nut, Mount Grant, and White Mountains PMUs are now and will continue to be most at risk from the various stressors acting upon the birds and their habitat (see the foreseeable future discussion above in the **Determination** section), we identify this portion of the range for further consideration. The Pine Nut, Mount Grant, and (to the extent known) White Mountains PMUs comprise the fewest numbers of birds and leks within the range of the bi-State DPS, with the Pine Nut PMU harboring the fewest number of birds and leks overall (the majority (67 percent) of the sage-grouse in the bi-State area occur within the Bodie and South Mono PMUs).

We analyzed whether stressors in these three PMUs (i.e., Pine Nut, Mount Grant, and White Mountains PMUs) rise to the level such that the sage-grouse is likely to

become an endangered species in the foreseeable future (threatened) in these three PMUs combined. We determined that none of the stressors within these three PMUs either independently or collectively is believed to have reduced, destroyed, or fragmented sagebrush habitat such that the DPS is not in danger of extinction or likely to become so in the foreseeable future. We note that data do indicate that impacts from nonnative, invasive and certain native plants, and thus the threat of wildfire, in the Pine Nut PMU are more extensive than in the Mount Grant and White Mountains PMUs. While these stressors continue in the Pine Nut PMU and may increase, monitoring continues to document sage-grouse in some historically occupied areas within the PMU. Also, the Pine Nut PMU currently holds the fewest number of birds and leks of all populations, and the potential loss of this already small population is not expected to impact the bi-State DPS to the extent that the remaining two PMUs with the smallest populations (i.e., Mount Grant and White Mountains PMUs) or the DPS as a whole is in danger of extinction or likely to become so in the foreseeable future.

In general, the combination of the bi-State DPS small population size, isolation due to fragmented habitat, peripheral locations, and the presence of several stresors to the sage-grouse in the Pine Nut, Mount Grant, and White Mountains PMUs makes these PMUs more vulnerable than the Bodie, Desert Creek-Fales, and South Mono PMUs, but not to the degree that sage-grouse are in danger of extinction or likely to become so in the foreseeable future in these PMUs. This is demonstrated by population data from each of these three smaller PMUs (i.e., the Pine Nut, Mount Grant, and White Mountains PMUs) indicating that: (1) Multiple sage-grouse are still observed through monitoring activities,

(2) one to eight active leks are present within each PMU, (3) stresors acting upon these small populations are not geographically concentrated and exist in all six PMUs throughout the range of the bi-State DPS; and (4) a recent 10-year trend analysis by Coates *et al.* (2014a, entire) between 2003 and 2012 found that several of the populations in the bi-State area (including but not limited to the core populations) are stable (as opposed to declining).

Even though we have determined that this portion of the bi-State DPS's range (i.e., the Pine Nut, Mount Grant, and White Mountains PMUs) is not in danger of extinction or likely to become so in the foreseeable future, there is information available that may lead some to believe that the populations in these three PMUs are at risk of becoming endangered in the foreseeable future. However, the best available information currently indicates that a substantial amount of conservation effort is currently being applied (and will be carried out in the future) within the Pine Nut, Mount Grant, and White Mountains PMUs, as well as throughout the entire range of the DPS. These conservation efforts are targeted at the stressors that are resulting in the greatest synergistic impacts on the populations (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)**, above) both currently and in the future. Significant efforts are being applied in these three PMUs including (but not limited to) reducing impacts from: (1) Infrastructure (permanent road closures, fence maintenance/marking), pinyon-juniper encroachment (pine burn and conifer removal), invasive plants (weed management, including livestock control; cheatgrass removal), urbanization and habitat conversion (riparian/meadow restoration of brood-rearing

habitat, establishment of conservation easements), and grazing management (management of wild horse herds, establishing/repairing riparian exclosures). Application of these conservation efforts across the range of the DPS over the next 10 years that we determine to have both certainty of implementation and effectiveness, as described in our detailed PECE analysis (available at *www.regulations.gov*, Docket No. FWS–R8–ES–2013–0072), changes the trajectory from a point where the DPS was previously considered to be a threatened species, to a point where the best available information related to current and future conservation efforts indicates the entire range of the DPS, including the specific portion of the DPS's range in the Pine Nut, Mount Grant, and White Mountains PMUs, does not meet the definition of a threatened species or an endangered species.

In conclusion, we find that substantial information indicates that: (1) There are no portions of the bi-State DPS that may be significant, and (2) the DPS is not likely to become an endangered species in the foreseeable future in the portion of its range that harbors the least number of birds (i.e., the Pine Nut, Mount Grant, and White Mountains PMUs). Therefore, we find that listing the bi-State DPS is not warranted.

Summary of Comments and Recommendations

In the proposed rule published on October 28, 2013 (78 FR 64358), we requested that all interested parties submit written comments on the proposal by December 27, 2013. This comment period was subsequently extended an additional 45 days, as

announced on December 20, 2013 (78 FR 77087), and closed on February 10, 2014. The comment period was reopened on April 8, 2014 (79 FR 19314), announcing two public hearings and a 6-month extension of the final determination of whether or not to list the bi-State DPS due to substantial disagreement regarding the sufficiency or accuracy of the available data relevant to the proposed listing, making it necessary to solicit additional information. This second comment period on the proposed listing rule closed on June 9, 2013. Finally, a third and final comment period was opened on August 5, 2014 (79 FR 45420), and closed on September 4, 2014, to give the public the opportunity to review and provide comments on new information received regarding population trends as well as State and Federal agency funding and staffing commitments for various conservation efforts associated with the BSAP.

We contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. We also received requests for public hearings. We held one public hearing in Minden, Nevada on May 28, 2014, and one public hearing held in Bishop, California, on May 29, 2014. Newspaper notices inviting general public comment and advertisement of the information and public hearings was published in The Inyo Register, The Record Courier, and the Reno-Gazette Journal.

During the three comment periods, we received more than 6,400 comment letters directly addressing the proposed listing of the bi-State DPS. Submitted comments were both for and against listing the DPS with designated critical habitat. During the May 28

and 29, 2014, public hearings, 11 individuals or organizations commented on the proposed rules; 3 were opposed to the proposed listing, and the remaining individuals or organizations did not express an explicit opinion on the listing proposal, but articulated issues they considered to need more attention (e.g., economic impacts associated with the proposed critical habitat). All substantive information provided during the comment periods has either been incorporated directly into this withdrawal or addressed below. We also received a few comments related to the proposed 4(d) rule, and more than 200 comment letters both in support of and opposition to the proposed critical habitat designation; however, given the decision to withdraw the listing proposal (see **Determination** above), no further assessment of the proposed 4(d) rule and critical habitat designation is necessary at this time.

Peer Review

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited expert opinion from five appropriate and independent specialists with scientific expertise that included familiarity with sage-grouse, the bi-State DPS and their habitat, including biological needs and threats. We received responses from four of the peer reviewers.

We reviewed all comments received from the peer reviewers for substantive issues and new information regarding the listing of the bi-State DPS. Peer reviewer

comments are addressed in the following summary and incorporated into this withdrawal document as appropriate.

Peer Review Comments Received

(1) Comment: One peer reviewer requested clarification on our assumption that there are "four to eight demographically independent populations" in the bi-State area.

Our Response: Our understanding of the population structure of sage-grouse in the bi-State area is evolving and primarily informed by telemetry and genetic research. However, even with these data available, there remains uncertainty in our understanding. There is likely a continuum across the bi-State area in the degree of isolation among populations and not a simple connected versus non-connected status that can be assigned to a group of birds. Over the past decade, traditional VHF telemetry approaches suggested little bird movement among populations in the bi-State area, leading to our assumption that there was on the order of eight generally discrete populations of birds. While these studies were not designed to address bird movement among populations and ultimately were likely biased because mostly adult birds were marked (as opposed to juvenile birds that are more likely to disperse) and limited searching for "lost" birds (VHF receivers have a restricted detection distance) occurred, they have demonstrated differing vital rates (e.g, adult and nest survival) among populations in the bi-State area suggesting some degree of demographic independence. More recently, limited GPS telemetry has demonstrated movements between the Pine Nut population and the Desert

Creek-Fales population, which previously were assumed to be isolated from one another. Furthermore, two recent and independent genetic evaluations have concluded there are between three and four (Oyler-McCance *et al*. (2014, p. 8) or five (Tebbenkamp 2014, p. 18) unique genetic clusters in the bi-State area. In addition, Tebbenkamp (2014, p. 12) did not evaluate the Pine Nut population, which Oyler-McCance *et al*. (2014, p. 8) found to be unique. Thus, presumably Tebbenkamp (2014, entire) would have differentiated six populations had these data been available. Based on this information, we presume that there are likely three to six populations or groups of birds in the bi-State area that largely operate demographically independent of one another. We have refined our Species Report to reflect these new data.

(2) Comment: One peer reviewer requested clarification on how lek counts were used to derive the population size estimates we report in Table 1 of our proposed rule.

Our Response: We relied on the lek count data and population estimators provided by NDOW and CDFW; both agencies use the estimator described in Connelly *et al*. (2003, p. 22), whereby they adjust the maximum number of males counted by dividing by 0.75 (to account for unseen males) and then multiply this number by 2.0 (assuming 2:1 sex ratio of females to males) to derive total birds. NDOW then adjusts this number to account for undetected leks by dividing the total bird estimate by varying ratios (from 0.75 to 0.90) depending on specific knowledge (or lack of knowledge) of the population of interest. Similarly, CDFW adjusts the total bird estimate to account for undetected leks but uses a ratio between 0.85 and 0.95.

We recognize that there is uncertainty in translating counts of males displaying on breeding grounds (lek counts) into estimates of population size (Connelly *et al*. 2003, p. 22; Walsh *et al*. 2004, entire). Nevertheless, we believe these data can provide a general context to the bi-State DPS in the absence of more precise information.

(3) Comment: One peer reviewer asked how we concluded that there was a reduction in available sage-grouse habitat in the bi-State area by 50 percent.

Our Response: Based on a Geographic Information System (GIS) modelling approach that was informed by research on woodland succession in the Great Basin, an estimated 390,000 ha (963,000 ac) of sagebrush habitat has converted to woodland vegetation over the past 150 years, resulting in a reduction of sagebrush habitat from slightly over 1,044,000 ha (2,580,000 ac) in 1850 to approximately 664,890 ha (1,643,000 ac) today across the range of the bi-State DPS (USGS 2012, unpublished data). Additionally, a resource selection function (RSF) model was developed to estimate currently suitable sage-grouse habitat across the bi-State area (Bi-State TAC 2012b, unpublished data). The RSF model included a combination of biotic, abiotic, and anthropogenic features that best explain sage-grouse selection or avoidance of a specific area. The RSF model predicated that suitable sage-grouse habitat in the bi-State area amounted to slightly less than 435,440 ha (1,076,000 ac). Taking the average of these two quotients (i.e., 664,890 ha (1,643,000 ac) and 435,440 ha (1,044,000 ac)) led us to the conclusion that sage-grouse habitat availability in the bi-State area has been reduced

by approximately 50 percent. We recognize that there are uncertainties associated with these data and that the amount of uncertainty is not known. However, we note that our assumption of a 50 percent decline can be either an overestimate or an underestimate. Despite the uncertainty, we believe this is a reasonable estimate of habitat loss based on the best available scientific and commercial information.

(4) Comment: One peer reviewer asked how we concluded that there has been a reduction in the overall sage-grouse *population* in the bi-State area by more than 50 percent.

Our Response: Based on our analysis of historical habitat loss (see our response to *Comment 3*), we assumed a 1:1 ratio of bird loss to habitat loss. We also considered the remaining sagebrush habitat in the bi-State area to be variously compromised by a variety of stressors, thereby reducing the suitability of these habitats for sage-grouse and ultimately the habitats carrying capacity for sage-grouse. Furthermore, there are documented accounts of population extirpation or population reductions in the bi-State area (USFS 1966, p. 4; Hall *et al*. 2008, p. 96; Bi-State TAC 2012a, p. 24). Therefore, we assumed that population loss exceeded habitat loss and concluded that population loss was likely greater than 50 percent.

(5) Comment: One peer reviewer stated that higher-elevation mountain sagebrush communities are generally more resilient than lower-elevation Wyoming big sagebrush communities and as such are more likely to persist. Further, they stated that each of these

community types differ in their susceptibility to invasive and increasing species (i.e., cheatgrass and woodland succession). They requested an evaluation as to the proportion of the bi-State DPS existing within each of these general sagebrush systems.

Our Response: We utilized a base vegetation layer developed by the Bi-State TAC, which also informed the RSF modeling effort, to inform this discussion (Bi-State TAC 2012b, unpublished data). Additional detail on this product is available in the Species Report (see Appendix B).

Across the entire bi-State area (delineated by PMU boundaries), approximately 664,944 ha (1,643,114 ac) (36 percent of the bi-State area) are composed of sagebrush communities. Additionally, there are approximately 26,870 ha (66,399 acres) (1.5 percent) of higher-elevation mountain shrub communities, which includes other shrub species besides sagebrush such as bitterbrush (*Purshia tridentata*), snowberry (*Symphoricarpos* sp.), and desert peach (*Prunus anersonii*), among others. We included this additional shrub community as part of the mountain big sagebrush evaluation because these other species have been shown to be important to sage-grouse in the bi-State area (Kolada *et al.* 2009b, p. 1,336) and they often co-occur with mountain big sagebrush; therefore, we anticipate they will respond to invasive or increasing species in a similar manner. Partitioning these communities further, there are approximately 183,860 ha (454,330 ac) (27 percent of available sagebrush) of higher-elevation mountain big sagebrush (including mountain shrub community), 373,747 ha (923,550 ac) (54 percent) of lower-elevation Wyoming big sagebrush, and 134,207 ha (331,633 ac) (19

percent) of low sagebrush, such as black sagebrush (*Artemisia nova*) and little sagebrush (*Artemisia arbuscu*la). We recognize the importance of this information to the discussion and have added information to the Species Report (see *Sagebrush Ecosystem* section), specifically the proportion of these communities contained within individual PMUs.

(6) Comment: One peer reviewer asked how the BLM RMPs, the BSAP, and the plans developed by the Los Angeles Department of Water and Power (LADWP) are used in evaluating existing regulatory mechanisms.

Our Response: Section 4 of the Act stipulates that one of the factors the Secretary shall use to determine whether any species is an endangered or threatened species is the inadequacy of existing regulatory mechanisms**.** In addition to those identified above, **e**xisting regulatory mechanisms that could provide some protection for greater sage-grouse in the bi-State area include: (1) Local land use laws, processes, and ordinances; (2) State laws and regulations; and (3) Federal laws and regulations. Regulatory mechanisms, if they exist, may preclude the need for listing if such mechanisms are judged to adequately address the threats to the species such that listing is not warranted. Conversely, threats on the landscape continue to affect the species and may be exacerbated when not addressed by existing regulatory mechanisms, or when the existing mechanisms are not adequate (or not adequately implemented or enforced).

We use an inherently qualitative approach to evaluate existing regulatory mechanisms. In general, this means that we assess language in an existing plan as well as

any pertinent decisions based on such language (track record) and evaluate it against the best available science informing species conservation. Regulations in some counties identify the need for natural resource conservation and attempt to minimize impacts of development through zoning restrictions, but to our knowledge neither preclude development nor do they provide for monitoring of the loss of sage-grouse habitats. Similarly, State laws and regulations are general in nature and provide flexibility in implementation, and do not provide specific direction to State wildlife agencies relative to sage-grouse conservation, although they can occasionally afford regulatory authority over habitat preservation (e.g., creation of habitat easements and land acquisitions).

In the proposed rule, we found that most existing Federal regulatory mechanisms (not including the BLM and USFS Land Use Plan amendments) were sufficiently vague as to offer limited certainty as to managerial direction pertaining to sage-grouse conservation, particularly as they relate to addressing the threats that are significantly impacting the bi-State DPS (e.g., nonnative, invasive and certain native plants; wildfire and altered wildfire regime; infrastructure). However, we have determined that the BSAP ameloriates the threats tothe Bi-State DPS and its habitat (see additional Land Use Plan amendment discussion in the **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section above, and our detailed PECE analysis available on the Internet at http://*www.regulations.gov*, Docket No. FWS–R8–ES–2013–0042). In addition, the proposed BLM and USFS Land Use Plan amendments (USDI and USDA 2015, entire) will reinforce the conservation commitments made in the BSAP; however, we note that we do not rely on them for our determination. We also

note that the BLM Bishop Field Office's RMP has proven to be an effective regulatory mechanism for the bi-State DPS and its habitat. For additional detail, see the *Existing Regulatory Mechanisms* section in the Species Report (Service 2015a, pp. 153–154).

State Comments Received

(7) Comment: The State of Nevada questioned how the Service could list the bi-State DPS given that more than a decade of conservation and restoration initiatives have been implemented or initiated, particularly given that over the past 12 years sage-grouse populations have been stable-to-increasing.

Our Response: We recognize the significant efforts of all of our partners in the conservation of the bi-State DPS, and these conservation efforts and the manner in which they are helping to ameliorate threats to the DPS are considered in our final agency action. Section 4(b)(1)(A) of the Act requires us to take into account those efforts being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, within any area under its jurisdiction. However, the Act requires us to make determinations based on the best scientific and commercial data available "at the time of listing" after conducting a review of the status of the species and after taking into account those efforts, if any, being made to protect such species. Furthermore, we are encouraged by the recent information provided by the U.S. Geological Survey (Coates *et al*. 2014, p. 19), which generally concludes that populations with the bi-State area have been stable between 2003 and 2012. Additionally, these data

predict that over the next 5 years the majority of populations are anticipated to grow. We do note, however, that the Parker Meadows and Fales populations are projected to decline and further that the White Mountains and Mount Grant populations were not analyzed due to lack of data. The Nevada Department of Wildlife reports the latter population has been in decline. Also, while we place a high degree of confidence in the USGS analysis, within the Pine Nuts PMU, a population projected to increase, the sole lek site used to partially inform the model has been largely inactive in the last 2 years, and these data were not incorporated into the USGS analysis.

While the bi-State DPS's population trend information is highly informative and can assist us in informing our listing decision, the Act stipulates that the Secretary shall make a decision to list a species as an endangered or threatened species based on any one or more of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. Assuming current conditions continue into the future in the bi-State area, we have identified the threats across the range of the bi-State DPS that are resulting in the present or threatened destruction, modification, or curtailment of its habitat or range, and other natural or manmade threats affecting the DPS's continued existence. Many of these impacts are cumulatively acting upon the bi-State DPS and, therefore, increase the risk of extinction. However, after consideration of partially completed projects and future conservation efforts that we conclude will be implemented and

effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section, above), we believe the bi-State DPS is not likely to become endangered within the foreseeable future (threatened), throughout all or a significant portion of its range. Therefore, the bi-State DPS of greater sage-grouse does not meet the definition of a threatened or endangered species, and we are withdrawing the proposed rule to list the DPS as a threatened species.

(8) Comment: The listing of the bi-State DPS will not enhance or expedite conservation as it will call for the same conservation measures already identified by the BSAP. Further, the listing action would alienate groups working on bi-State sage-grouse conservation.

Our Response: The Act mandates that the Secretary shall determine whether any species is an endangered or threatened species based on any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. Therefore, the Service does not have the ability to consider public perception when evaluating a listing decision. We remain committed to ensure conservation of the bi-State DPS through continued cooperation with our partners currently and into the future. We recognize the significant efforts of all of our partners in the conservation of the bi-State DPS. While we would be disappointed by a reduction in participation and commitment of resources for various

conservation efforts, we also recognize that there is a potential for this result to be realized regardless of the outcome of our final agency action as outlined within this document.

Other Comments Received

(9) Comment: A few commenters suggest that the bi-State DPS is not a genetically unique subspecies or that this population does not meet our standard for recognition as a DPS.

Our Response: In our 12-month finding on petitions to list three entities of sage-grouse (75 FR 13910), we found that the bi-State population of sage-grouse meets our criteria as a DPS of the greater sage-grouse under Service policy (61 FR 4722). This determination was based principally on genetic information, where the DPS was found to be both discrete, and significant to the remainder of the sage-grouse taxon. The bi-State DPS defines the far southwestern limit of the species' range along the border of eastern California and western Nevada (Stiver *et al*. 2006, pp. 1–11). Sage-grouse in the bi-State area contain a large number of unique genetic haplotypes not found elsewhere within the range of the species (Benedict *et al.* 2003, p. 306; Oyler–McCance *et al.* 2005, p. 1,300; Oyler–McCance and Quinn 2011, p. 92, Oyler-McCance *et al*. 2014, p. 7). The genetic diversity present in the bi-State area population is comparable to other populations, suggesting that the differences are not due to a genetic bottleneck or founder event (Oyler–McCance and Quinn 2011, p. 91; Oyler-McCance *et al*. 2014, p. 8). These

studies provide evidence that the present genetic uniqueness exhibited by bi-State area sage-grouse developed over thousands and perhaps tens of thousands of years, hence, prior to the Euro-American settlement (Benedict *et al.* 2003, p. 308; Oyler–McCance *et al.* 2005, p. 1,307; Oyler-McCance *et al*. 2014, p. 9). The available genetic information demonstrates that the bi-State sage-grouse are both discrete from other greater sage-grouse populations, and are genetically unique. Therefore, we believe the best scientific and commercial data available clearly demonstrate that the bi-State sage-grouse meet both the discreteness and significance criteria to be designated as a distinct population segment.

(10) Comment: Several commenters expressed concern that habitat conservation efforts may be hampered due to potential additional regulatory requirements and uncertainty as to which activities would require consultation with the Service under the Act, as it pertains to take of the species and adverse modification or destruction of critical habitat. Specifically, commenters were concerned that funding for on-the-ground activities could be reduced due to additional costs associated with consultation under the Act.

Our Response: Section 7 of the Act states that each Federal agency shall consult with the Secretary of the Interior to insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of delineated critical habitat. The duty to consult under Section 7 includes all actions that may affect a

listed species, even those that may improve habitat condition and ultimately positively influence species conservation. We recognize that the mandate of the Act, may at times, divert funding and effort away from on-the-ground activities. However, our responsibility is to ensure, through consultation, that activities which may affect listed species are not likely to jeopardize the continued existence of endangered and threatened species. With regard to the bi-State DPS, no additional regulatory requirements will occur because we have determined the DPS does not meet the definition of a threatened or endangered species.

(11) Comment: Several commenters indicated that the proposed listing of the bi-State DPS was premature. These commenters submit that adequate time should be provided to determine if conservation efforts, such as those identified in the 2012 BSAP, are sufficient to maintain a viable sage-grouse population in the bi-State area.

Our Response: We recognize the significant efforts of all of our partners in the conservation of the bi-State DPS, and these conservation efforts and the manner in which they are helping to ameliorate threats to the DPS are considered in our final agency action. Section 4(b)(1)(A) of the Act requires us to take into account those efforts being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, within any area under its jurisdiction. However, the Act requires us to make determinations based on the best scientific and commercial data available "at the time of listing" after conducting a review of the status of the species and after taking into account those efforts, if any, being made to protect such species.

Concern from a variety of private, Tribal, industry, State, Federal, and non-governmental entities over the conservation of the bi-State DPS has been apparent since the late 1990's (Bi-State Local Planning Group 2004, p.1). This is reflected by the NDOW decision to suspend hunting in the area in 1999 (Bi-State Local Planning Group 2004, p.59). Significant effort was expended in the early 2000's and culminated in 2004 with the first edition of a greater sage-grouse conservation plan for the bi-State area of Nevada and eastern California (Bi-State Local Planning Group 2004). Since this time, many conservation efforts have been completed, while many others are in progress. After consideration of partially completed projects and future conservation efforts that we have found to be sufficiently certain to be implemented and effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section, above), we believe the bi-State DPS is not in danger of becoming extinct throughout all or a significant portion of its range, and is not likely to become endangered within the foreseeable future (threatened), throughout all or a significant portion of its range. Therefore, we are withdrawing the proposed rule to list the DPS as a threatened species.

(12) Comment: Several commenters stated that listing the bi-State DPS would be counterproductive to ongoing Bi-State LAWG conservation efforts by affecting participation and funding.

Our Response: We recognize the significant efforts of all of our partners in the conservation of the bi-State DPS. While we would be disappointed by a reduction in

participation and commitment of resources for various conservation efforts, we also recognize that there is a potential for this result to be realized regardless of the outcome of our final agency action as outlined within this document. The Act mandates that the Secretary shall determine whether any species is an endangered or threatened species based on any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. Therefore, the Service does not have the ability to consider public perception when evaluating a listing decision. However, after consideration of partially completed projects and future conservation efforts that we have found to be sufficiently certain to be implemented and effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section, above), including efforts that involve the LAWG, we find the DPS is not in danger of becoming extinct throughout all or a significant portion of its range, and is not likely to become endangered within the foreseeable future (threatened), throughout all or a significant portion of its range. Therefore, we are withdrawing the proposed rule to list the DPS as a threatened species. We remain committed to ensure conservation of the bi-State DPS through continued cooperation with our partners currently and into the future.

(13) Comment: Several commenters stated that the proposal for listing should better recognize current and ongoing voluntary conservation efforts in addition to conservation measures that are in place to minimize potential adverse effects resulting

from activities including livestock grazing, mineral development, and recreation and fire management.

Our Response: We analyzed the best scientific and commercial information available on both current and future conservation efforts, and conservation measures intended to minimize potential adverse effects to the bi-State DPS and its habitat (see *Existing Regulatory Mechanisms*, **Ongoing and Future Conservation Efforts**, and **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** sections). Any conservation-related actions, protection measures, and commitments provided by partners and commenters were taken into consideration for this final agency action.

(14) Comment: Several commenters stated that the proposed rule dismisses past conservation measures without fairly addressing their breadth, effectiveness, and chance of success. Further they submit the Service must evaluate the conservation measures through (at minimum) an analysis consistent with PECE, and must fully consider how conservation measures will reduce or remove threats. The commenters believe that a fair evaluation of the past conservation efforts would demonstrate that they are sufficient to protect the bi-State DPS.

Alternatively, several commenters argue that past conservation efforts, while well-intended, have been inadequate to provide sufficient conservation for the DPS.

Further, the commenters contend that the 2012 BSAP is voluntary in nature and does not meet the PECE standard.

Our Response: We acknowledge and commend the commitment of many partners in implementing numerous conservation actions within the range of the bi-State DPS. The PECE policy applies to formalized conservation efforts that have not yet been implemented or those that have been implemented, but have not yet demonstrated whether they are effective at the time of listing. Our analysis of all conservation efforts currently in place and under development for the future is described in detail in the *Existing Regulatory Mechanisms*, **Ongoing and Future Conservation Efforts**, and **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** sections of this document. The effect of such conservation efforts on the status of a species is considered under the **Summary of Factors Affecting the Species** section of this document.

In this document, we considered whether formalized conservation efforts are included as part of the baseline through the analysis of the five listing factors, or are appropriate for consideration. After consideration of partially completed projects and future conservation efforts that we have found to be sufficiently certain to be implemented and effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section, above), we find the bi-State DPS is not in danger of becoming extinct throughout all or a significant portion of its range, and is not likely to become endangered within the foreseeable future (threatened), throughout all or

a significant portion of its range. Therefore, we are withdrawing the proposed rule to list the DPS as a threatened species.

(15) Comment: Several commenters expressed concern that economic development will be negatively impacted by listing and suggested that it is necessary for the Service to conduct an analysis of the impacts that listing a species may have on local economies prior to issuance of a final rule. Alternatively, one commenter submitted that the local economy will be positively benefited.

Our Response: Under the Act, the Secretary shall make determinations whether any species is an endangered species or a threatened species solely on the basis of the best scientific and commercial data available. Thus, the Service is not allowed to conduct an analysis regarding the economic impact of listing endangered or threatened species. However, the Act does require that the Service consider the economic impacts of a proposed designation of critical habitat. A draft of the economic analysis for the now withdrawn proposed critical habitat is available to the public for informational purposes on the Internet at *www.regulations.gov*, Docket No. FWS–R8–ES–2013–0042. As for the Service's proposal to list the bi-State DPS, after consideration of partially completed projects and future conservation efforts that we have found to be sufficiently certain to be implemented and effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section, above), we find the bi-State DPS is not in danger of becoming extinct throughout all or a significant portion of its range, and is not likely to become endangered within the foreseeable future (threatened), throughout all or

a significant portion of its range. Therefore, we are withdrawing the proposed rule to list the DPS as a threatened species, and critical habitat will not be designated.

(16) Comment: Several commenters stated that potential impacts to the bi-State DPS and its habitat caused by roads will vary by road type. Specifically, the commenters asserted that small, unimproved dirt roads such as those typically associated with transmission line rights-of-ways have no impact. Therefore, the commenters believe that extrapolating research findings such as Forman and Alexander (1998), Gelbard and Belnap (2003), and Connelly *et al*. (2000a) to all roads is not appropriate.

Our Response: We agree that road type, the level and timing of traffic activity, and associated extent of road maintenance appear to influence the degree to which a road may affect sage-grouse and adjacent sagebrush habitat. Where appropriate (e.g., *Roads* sections of the Species Report and *Infrastructure* section of this document), we clarified our analysis of potential road impacts to more explicitly differentiate between road types. There is little direct evidence regarding impacts caused by small, unimproved roads such as dirt two tracks. Consequently, we cannot provide more definitive information with regards to these road types.

We maintain that the literature identified above as well as additional referenced material including Bui (2009) and Forman (2000) are the best available information relative to potential impacts caused by roads. We believe these sources are informative because the types of roads investigated are present in the bi-State area. Our GIS analysis

(Service 2014, unpublished data) revealed that out of 55 leks sites assessed in the bi-State area, 35 are currently within 5 km (3.1 mi) of paved, secondary roads and therefore could potentially be impacted. Analyses of road impacts to greater sage-grouse leks documented decreasing lek counts and population trends (Johnson *et al.* 2011, p. 449). The actual mechanism for these declines remain elusive (Manier *et al.* 2014, p. 50) but declining habitat condition and use from the impacts described in Blickley *et al*. (2012, pp. 467–469; i.e., noise), Gelbard and Belnap (2003, p. 426; i.e., invasive species), and Connelly *et al.* (2000a, p. 974) have been implicated in declines from other activities, such as energy development. Therefore, we anticipate similar responses from the same impacts introduced by roads. For further information, a detailed analysis of the potential impacts of roads is provided in the Species Report (available at *http://www.regulations.gov*, Docket No. FWS–R8–ES–2013–0072) and summarized under in this document.

(17) Comment: Two commenters question our conclusion that the number of roads in the bi-State area are likely to increase in the future. Alternatively, one commenter stated that roads are likely to increase.

Our Response: As stated in our proposed rule, we consider substantial new development of improved (i.e., paved) roads unlikely in the bi-State area (see section *Infrastructure* in the proposed rule). With regards to the potential development of small, unimproved secondary roads within the bi-State area, we stated in our proposed rule (and reaffirm here; see *Infrastructure*, above) that development of small, unimproved roads is

likely, although we do not attempt to quantify the extent of potential new road development.

As stated in our proposed rule, both the Inyo and Humboldt-Toiyabe National Forests have recently completed Travel Management Plans (USFS 2009, entire; USFS 2010, entire). During these planning processes, nearly 2,000 km (1,225 mi) of previously unauthorized routes were adopted into the National Forest System (USFS 2009, p. 3; USFS 2010, p. 5). While some of these routes have been in place for many years, others were reported to be recent developments. We believe this suggests a history of unauthorized road development, apparently due to enforcement challenges, and to some extent is suggestive of future activity. In addition, the BSAP (Bi-State TAC 2012a, pp. 18, 31, 36, 41) identifies the recent or potential future development of unimproved roads as a concern in four of the six PMUs. Further, we know of one recent project proposal to add a paved road segment to the Mammoth-Yosemite Airport in Long Valley (Perloff 2014, pers. comm.) and additional projects to improve/realign Highway 395 near Bridgeport, California (Cornwell 2014, pers. comm.). Thus, we consider this information, collectively, is an indication that additional development of unimproved roads is foreseeable. While we remain challenged to accurately quantify the extent of future unimproved road development, or quantify potential road improvements, we maintain that the potential exists and that it is likely to continue to occur.

Finally, there appears to be substantial and increasing interest among recreational users of unimproved roads in the bi-State area, as well as an increase in road traffic

associated with a mine site in the Mount Grant PMU (Bi-State TAC 2012a, p. 36). As a result, we anticipate that recreational and mining vehicle traffic will continue to increase, especially in the Mount Grant and Pine Nut PMUs (see the roads discussion under the *Infrastructure* section of the Species Report). Based on the best available literature regarding potential impacts of road activity on sage-grouse and their habitat (such as declines in lek attendance, and alterations to predator or invasive species occurrence (Gelbard and Belnap 2003, p. 426; Holloran 2005, p. 40; Bui 2009, p. 31; Blickley *et al*. 2012, p. 467)), traffic volume may be more influential on habitat use by sage-grouse than mere road presence (Gillan *et al*. 2013, p. 307), especially as it pertains to unimproved dirt roads. Therefore, we consider roads to be a potential ongoing impact and not merely a historic one, and as a result, conservation efforts are being implemented currently and in the future (e.g., temporary and permanent road closures) to reduce potential road impacts (Bi-State TAC 2014a, *in litt.*). The BSAP contains a number of provisions to eliminate or reduce impacts assocaited with infrasturcutre and human disturbance (Bi-State TAC 2012a), including roads, that we have found to be sufficiently certain to be implemented and effective in ameliorating this threat (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section, above).

(18) Comment: Several commenters submit that feral horses pose an impact to sagebrush habitat and are a threat to sage-grouse conservation.

Our Response: We agree with the commenters that feral horses can degrade sagebrush habitat and in turn can have negative impacts on sage-grouse populations in

the bi-State area. As stated in our proposed rule, there are seven Wild Horse Territories or Herd Management Areas, as well as one Wild Horse Unit, which overlap sage-grouse habitat in the bi-State area (see *Grazing and Rangeland Management*, above). The most significant impacts are apparent in the Pine Nut, Mount Grant, and White Mountains PMUs, where associated horse numbers are currently above the targeted management levels (Bi-State TAC 2012a, pp. 19, 37, 41). However, we have limited data to infer the degree of impact to sage-grouse populations caused by apparent habitat degradation, and no new information was received to further inform our understanding of this potential impact. Management of herd size by Federal agencies is an ongoing challenge as horses reproduce rapidly and management is expensive and politically sensitive. Therefore, based on the current known impacts from feral horses, we anticipate impacts from wild horse management could continue into the future and as a result, conservation efforts are being implemented currently and in the future (e.g., evaluate and manage wild horse herds throughout the bi-State DPS range) to reduce potential impacts (Bi-State TAC 2014a, *in litt.*).

(19) Comment: Several commenters suggest that impacts caused by hunting are more severe than we conclude in the proposed rule. Alternatively, several other commenters generally agreed with our conclusions on harvest but submit that we should consider the confusion in public perception that is created by not more fully recognizing an intentional and controllable form of mortality.

Our Response: The allowance of recreational sage-grouse hunting in the bi-State area is based on the concepts of compensatory and additive mortality. The compensatory mortality hypothesis contends that populations compensate for harvest mortality by reducing rates of natural mortality (e.g., starvation, predation, or disease); thereby, overall mortality remains unchanged (Anderson and Burnham 1976, pp. 5–10). Additive mortality results in an increase in total mortality with increasing harvest mortality.

Results of studies to determine whether hunting mortality in sage-grouse is compensatory or additive have been contradictory (Crawford 1982, p. 376; Crawford and Lutz 1985, p. 72; Braun 1987, p. 139; Johnson and Braun 1999, p. 83; Connelly *et al.* 2003, p. 337; Sedinger *et al.* 2010, p. 329). Thus, an appropriate harvest level has not been determined for sage-grouse populations, including for the bi-State area. Currently, State wildlife agencies across the range of the greater sage-grouse attempt to keep harvest levels below 5 to 10 percent of the fall population based on recommendations in Connelly *et al.* (2000a, p. 976). This harvest level of the fall populations appears to be the adopted standard among States and, in general, species experts agree this level is compatible with conservation (Reese and Connelly 2011, entire).

In 1997, NDOW closed the hunting season for sage-grouse in the bi-State area (NDOW 2012, *in litt*., p. 4); thus, sage-grouse in the bi-State area can only be harvested in two select locations (i.e, the North and South Mono Hunt Units, or the Bodie Hills and Long Valley areas in Bodie and South Mono PMUs) in California. Since 1998, CDFW has annually issued between 20 and 35 single-bird hunting permits for each of these areas

(Bi-State Local Planning Group 2004, p. 173; CDFW 2012, *in litt*.). The estimated harvest from these permits averages approximately 40 total birds annually: 20 birds for the North Mono and 20 birds for the South Mono Hunt Units (CDFW 2012, *in litt*.).

Comparing the recent (2011 and 2012) estimated harvest levels to the estimated fall population in the California portion of the DPS over the past decade, harvest has been on the order of 2 to 4 percent of the estimated fall population in each of the Bodie and South Mono PMUs (CDFW 2012, *in litt*.). As currently instituted, the permit system employed by CDFW is keeping the estimated harvest rate below the currently accepted harvest rate of 5 to 10 percent of the fall population. We believe this harvest rate is compatible with a compensatory mortality paradigm and, therefore, likely has a negligible impact on the population.

We recognize that the public may be confused by our conclusion that limited hunting (as described above and in the *Overutilization Impacts* section) is not currently considered an impact to the DPS and that this activity has the potential to lead to an individual's perception that we are not fully recognizing an intentional and controllable form of mortality. However, we note that according to section 4(b) of the Act, we are required to make a listing determination based on the best scientific and commercial data available, which as stated above, indicates that the existing limited hunting is not an impact to the DPS at this time.

(20) Comment: One commenter provided information that a 1,537-ha (3,800-ac) conservation easement was recently completed near the West Fork Walker River along the boundary delineating the Desert Creek-Fales and Pine Nut PMUs.

Our Response: We are aware of this conservation easement, and (along with other known conservation easements) this information was taken into account during our evaluation of current conservation efforts and their value at reducing potential impacts posed by urbanization and habitat conversion (see *Conservation Efforts* section of the Species Report and the **Ongoing and Future Conservation Efforts** section of this document.

(21) Comment: One commenter requested clarification as to why we identified urbanization as a threat in the White Mountains PMU.

Our Response: Approximately 688,474 ha (1,701,258 ac) or 97 percent of the White Mountains PMU is publicly owned. However, there is potential for future urban development on the limited private lands present in this PMU, as demonstrated by the recently expanded housing developments near Chiatovich Creek in Nevada (Bi-State Lek Surveillance Program 2012, p. 38; Bi-State TAC 2012a, p. 41) that are approximately 8 km (5 mi) south of two recently identified leks. The best available data for this area indicate direct loss of sagebrush habitat, as well as the potential that this activity may be influencing connectivity between the northern and southern portions of this PMU (Bi-State TAC 2012a, p. 41). Without implementation of conservation actions, further,

additional habitat loss or fragmentation of this corridor area could occur, potentially limiting connectivity between the White Mountains PMU and Adobe Valley in the South Mono PMU and leading to further isolation of the White Mountains population. See *Urbanization and Habitat Conversion* above for further discussion of the potential impacts of urbanization and resulting sagebrush habitat fragmentation concerns and the conservation actions being implanted to address those impacts.

(22) Comment: One commenter stated that additional discussion is needed to address how urbanization is often driven by generational tax issues influenced by increased regulation and uncertainty of business operation.

Our Response: We recognize that many factors may influence a private land owner's decision to sell or retain his or her property, including the potential listing of federally endangered or threatened species. Further, we also have concern that the subdivision of currently intact parcels of private land may negatively affect sage-grouse conservation in the bi-State area (Bi-State TAC 2012a, pp. 18, 24, 31, 41), thus potentially contributing to additional loss and fragmentation of existing sagebrush habitat and reducing connectivity among populations. However, we believe that quantifying the likelihood of a private parcel being subdivided as a result of our listing action is speculative. We are unaware of specific information nor was any information provided by the commenter regarding how generational taxes or the perception of potential increased regulation as a result of listing the bi-State DPS might affect a landowner's plans for the disposition of his or her property

(23) Comment: Numerous commenters suggested that predators are a significant threat and that we did not account for this impact accurately. Further, many commenters suggested predator removal programs should be implemented. Alternatively, several commenters suggested that predator control is not sustainable and may have negative and unintended consequences.

Our Response: We recognize that predation of sage-grouse is the most commonly identified cause of direct mortality during all life stages (Schroeder *et al.* 1999, p. 9; Connelly *et al.* 2000b, p. 228; Casazza *et al*. 2009, p. 45; Connelly *et al.* 2011, p. 65). However, we note that sage-grouse have coevolved with a suite of predators (Schroeder *et al.* 1999, pp. 9–10), yet the species has persisted. Thus, this form of mortality is apparently offset by other aspects of the species life-history under "normal" conditions. However, when non-endemic predators are introduced into a system (one with which the prey species did not evolve (e.g., domestic cats and dogs)), or when other factors influence the balance between endemic predator and prey interactions, such that a predator gains a competitive advantage, predation may overwhelm a prey species life-history strategy and ultimately influence population growth and persistence (Braun 1998, pp. 145–146; Holloran 2005, p. 58; Coates 2007, p. 155; Bui 2009, p. 2; Coates and Delehanty 2010, p. 243; Howe *et al*. 2014, p. 41). Therefore, we agree that increases in sage-grouse predator abundance and predation rates are a concern by potentially negatively affecting population growth. However, we maintain that predation is a proximal cause of mortality and increases in predator abundance and predation rates are

ultimately caused by changes in habitat conditions, which positively influence predator occurrence or efficiency. See sections *Urbanization and Habitat Conversion*, *Infrastructure*, and *Predation* sections in the associated Species Report for a detailed analysis on the impacts of predation.

As a point of clarification, we agree that targeted, short-term predator removal programs may be warranted in instances where habitat restoration cannot be achieved in a timely manner. In these instances, predation rates and predator abundance may be artificially high and high sage-grouse mortality may be a concern. However, data do not appear to suggest that removal programs are sustainable or that they result in increased sage-grouse numbers (Hagen 2011, pp. 98–99). We intend to explore the potential benefits and negative ramifications caused by predator control through our continued coordination efforts with the Bi-State TAC and LAWG for continued conservation of the bi-State DPS.

(24) Comment: Several commenters questioned our conclusion that there has been a reduction in occupied sage-grouse habitat in the bi-State area.

Our Response: In the proposed rule, we described that range loss occurred due to woodland succession, urbanization and habitat conversion, infrastructure, and more recently to fire (see *Nonnative, Invasive and Native Plants*, *Urbanization and Habitat Conversion*, *Infrastructure*, and *Wildfire and Altered Fire Regimes* sections of the Species Report (Service 2015a)). Based solely on woodland succession (see our response

to *Comment 3* above), we conclude that the loss of sagebrush habitat in the bi-State area has been on the order of 50 percent. Further, we note that this estimate does not include approximately 52,439 ha (129,582 ac) of habitat altered by fire over the past 20 years nor areas that were known or could be anticipated to have supported sage-grouse historically such as Minden/Gardnerville, Nevada, Smith Valley, Nevada, Adobe Valley, California, and northern Inyo County, California (USFS 1966, p. 4).

We recognize there will remain uncertainty concerning historical occurrence of sage-grouse in the bi-State area; however, commenters did not provide any additional information to demonstrate that the habitat loss did not occur. Therefore, we reaffirm our conclusion, based on the best available scientific and commercial information, that the occupied habitat for the bi-State DPS was reduced as a result of habitat alterations and possibly other mechanisms (such as local extirpations of sage-grouse caused by harvest) that will remain unknown.

(25) Comment: Numerous commenters suggested that the degree of impact we assign to specific threat factors is not accurate. Many of these commenters provided opinions as to appropriate revisions. Further, several commenters identified inconsistencies in our proposed rule associated with our assignment of significance level to specific threats.

Our Response: The threats analysis and associated discussion of the degree of impact that is described in the Species Report (2013 and 2014 versions), our proposed

listing rule, and this document is based upon the best available scientific and commercial information. No additional information or assessments were provided by the commenters to support their claim that the analysis and conclusions in our proposed listing rule were inaccurate. However, where applicable in our revised Species Report (Service 2015a) and this document, we have updated these threats analysis discussions based on new information received since the proposed rule published on October 28, 2013 (78 FR 64358). With regard to potential inconsistencies in the threats analysis in the proposed rule, we made corrections to any inconsistencies identified and as applicable in both the revised Species Report (Service 2015a) and this document.

(26) Comment: Numerous commenters stated that OHV recreation is not an impact on sage-grouse or sagebrush habitat, especially in light of specific modern management practices such as sound restrictions, timing restrictions, and weed awareness programs.

Our Response: OHV recreation occurs on an extensive network of roads in the bi-State area. The activity is generally difficult to measure and we have little information to infer the amount of public participation in OHV recreation. Further, specific work assessing effects of OHV use on sagebrush and sage-grouse have not been conducted. Therefore, in this document and associated Species Report, we do not draw firm conclusions with respect to the impact this recreational activity may have on the species. However, we contend that it is reasonable to extrapolate relevant research on roads and vehicle traffic to understand and anticipate potential impacts from OHV activity.

Potential impacts may include noise disturbance, spread of invasive plants that degrades sage-grouse habitat, sage-grouse displacement or avoidance behavior, effects to predator and prey dynamics, collisions with vehicles, and habitat loss, among others (Bui 2009, p. 31; Knick *et al*. 2011, p. 219; Blickley *et al*. 2012, p. 467).

Therefore, we disagree with the commenter's assertion that OHV use has no impact on sage-grouse or sagebrush habitats but recognize the level of impact is more likely influenced by the degree and timing of the activity. Thus, specific locations, due to proximity to roads or extent of use, are likely to be more negatively influenced as compared to sites that do not share these characteristics. In the bi-State area, impacts appear most apparent in the Pine Nut PMU, especially on the west side of the Pine Nut Range, where bird occurrence is now rare (Bi-State TAC 2012a, pp. 18–19). Whether this localized reduction in sage-grouse was the direct result of any single form of human activity is not known, but it is likely it was caused by a combination of factors related to human development. We note that on the edges of the residential developments in this area, an extensive network of user-created roads has been established and this has extended the impact beyond the physical footprint of residential development.

We appreciate and agree that minimizing noise associated with vehicles, establishing timing restrictions on OHV activity, and educating users about weeds and the need to minimize their spread is beneficial for sage-grouse conservation. The commenters did not provide specific evidence as to how these management practices ameliorate potential impacts to the DPS, nor the degree to which these recommendations

are embraced by the broader OHV community. Thus, we could not evaluate these efforts more thoroughly. Therefore, while these management practices have helped address some of the effects of OHV activity on the bi-State DPS and its habitat, they have not eliminated the impacts to the DPS and its habitat.

(27) Comment: One commenter suggested that the potential threat to sage-grouse posed by fencing can be mitigated. Alternatively, another commenter stated that fencing is a major threat and expressed concern that there are no programs in place to require fencing to be removed.

Our Response: We agree that certain practices, such as making fences more visible to sage-grouse through the use of visual markers or employing the use of alternative fence designs (i.e., let-down fencing), can reduce certain impacts to the bi-State DPS caused by fencing, specifically collision. However, we do not anticipate that these efforts will completely ameliorate the threat of collision. For example, Stevens *et al*. (2012, p. 301) found that marking fences reduced the fence collision rate during the sage-grouse breeding season by 83 percent. Nevertheless, collisions still occurred at marked fences, especially those in close proximity to spring breeding sites, suggesting marking alone did not completely resolve the concern. Furthermore, while direct mortality through collision may be minimized by these approaches, indirect impacts caused by predation and other forms of habitat degradation may remain (see the Fencing discussion under the *Infrastructure* section of the Species Report (Service 2015a, pp. 60–62)). Therefore, a combination of approaches to managing fences and their impacts

needs to be applied, which may include removal. These efforts are currently ongoing in the bi-State area (Bi-State TAC 2012a, p. 5) as part of the BSAP.

With regards to the comment that fencing may be considered a major threat, we have described the impacts that may occur from fencing based on the best scientific and commercial information available. We found that fencing impacts are widespread but generally minor. In addition, management actions are being undertaken to further ameliorate this threat. For example, approximately 12 km (8 mi) of fencing has been removed or modified in the bi-State area affecting nearly 36 ha (90 ac) of habitat, and approximately 29 km (18 mi) of fencing has been marked with visual flight diverters. Furthermore, the BLM Resource Management Plan (RMP) and USFS LRMP draft amendments prepared by the Humboldt-Toiyabe National Forest, and the Carson City District and Tonopah Field Office of the BLM, specifically identify restrictions on new fence installation and removal or marking of fences already in place within 3.2 km (2 mi) of an active lek (USDI and USDA 2015, entire). Although these draft plans contain the mentioned provisions for fencing, we do not rely on them for our determination.

We note that there is no requirement for Federal or non-Federal landowners to develop a program that would require fencing to be removed from the bi-State area. We also believe that the removal of fencing throughout the bi-State area is not a reasonable consideration for land managers. However, consideration of alternative approaches to traditional fencing would help reduce impacts of fencing to sage-grouse (for example, use of let-down fence designs), and we will continue to work with partners to encourage

implementation of reduced or alternative approaches to fencing in areas that are most important to the bi-State DPS. Conservation efforts that either underway currently or planned forin the future can reduce fencing impacts in priority areas (e.g., BLM's removal of racetrack fencing in Bodie PMU, marking or modifying fencing in Pine Nut and South Mono PMUs) (Bi-State TAC 2014a, *in litt.*).

(28) Comment: One commenter disagreed with our characterization of pinyon-juniper woodlands as a "native invasive species." Two additional commenters suggested woodlands and woodland expansion is natural and should be left alone. Specifically, commenters speculated that forest occurrence is a reestablishment of sites that were harvested during historic mining in the later part of the 1800's.

Our Response: We agree that the term "native invasive species" is inappropriately applied to characterize the current expansion of native tree species into sagebrush habitats. Executive Order 13112 defined an invasive species as an exotic or native species that is nonnative to the specific ecosystem under consideration and whose introduction causes or is likely to cause economic environmental harm or harm to human health (64 FR 6183, February 8, 1999). This definition includes species native to other parts of North America; however, Miller *et al*. (2011, p. 157) defined "increasers" as species that occur within the region of interest. Therefore, we have modified our language where appropriate in this document and our revised Species Report (Service 2015a, entire).

Across the bi-State area, approximately 40 percent of the historically available sagebrush habitat has been usurped by woodland succession over the past 150 years (USGS 2012, unpublished data). As described in the *Nonnative Invasive and Native Increasing Plants* section of the Species Report, the cause of this increase is likely multifaceted but most certainly includes recovery from past disturbances such as mining. However, the support for this single mechanism is not apparent. For example, there are locations within the bi-State area where there are stumps from harvested trees that are attributable to the mining era; however most locations do not contain evidence of past tree cutting. Furthermore, genetic evidence suggests that sage-grouse populations contained within the bi-State area were historically more connected and not until relatively recently have these connections begun to erode (Oyler-McCance *et al*. 2014, pp. 10–11). Thus, this suggests that barriers to movement, such as trees, were less restrictive historically as compared to today.

Ultimately, the cause of woodland encroachment becomes less relevant in light of its implications as the response to tree presence by sage-grouse is uniformly negative (Commons *et al.* 1999, p. 238; Doherty *et al.* 2008, p. 187; Freese 2009, pp. 84–85, 89–90; Casazza *et al*. 2011, p. 159; Baruch-Mordo *et al.* 2013, p. 237). Therefore, management of pinyon-juniper encroachment in specific areas that would most benefit the bi-State DPS (e.g., lek sites, migration corridors, brood-rearing habitat), and is consistent with our understanding of a specific site's vegetation potential, is an important consideration by land managers (as described in the BSAP) to reduce this impact on the bi-State DPS and its habitat.

(29) Comment: One commenter disagreed with our conclusion that cheatgrass is a significant threat to the bi-State DPS, which the commenter believes was a departure from the BSAP (Bi-State TAC 2012a).

Our Response: We identified cheatgrass as an impact to the bi-State DPS and its habitat because it can replace vegetation essential to sage-grouse and negatively impact sagebrush ecosystems by altering plant community structure and composition, productivity, nutrient cycling, and hydrology (Vitousek 1990, p. 7; Miller *et al.* 2011, pp. 160–164). We maintain that our assessment and that of the BSAP (Bi-State TAC 2012a) are largely congruent. The BSAP recognizes cheatgrass as a threat in each of the six PMUs, considering it a low-severity threat in four PMUs, a moderate threat in one PMU, and a high-level threat in one PMU (Bi-State TAC 2012a, pp. 19, 26, 32, 37, 41, 49). We relied significantly on the assessment in the BSAP to inform our analysis and discussion in the Species Report (Service 2013a, 2015a), the proposed listing rule, and this document. However, we note that climate change and the interaction between this change agent and other stressors (such as cheatgrass) were not evaluated during the BSAP assessment. Thus, our evaluation in the Species Report (Service 2013a, 2015a), the proposed listing rule, and in this document includes an assessment of the potential influence climate change may have on cheatgrass occurrence.

Available climate data suggest that future cheatgrass conditions will be most influenced by precipitation and winter temperatures (Bradley 2009, p. 200). Predictions

on the timing, type, and amount of precipitation contain the greatest uncertainty. In the bi-State area, model scenarios that result in the greatest expansion of cheatgrass suggest much of the area remains suitable to cheatgrass presence with some additional high-elevation sites in the Bodie Hills, White Mountains, and Long Valley becoming more suitable than they are today (Bradley 2009, p. 204). On the opposite end of the spectrum, model scenarios that result in the greatest contraction in cheatgrass range suggest low-elevation sites such as Desert Creek-Fales and Mount Grant PMUs become less suitable for this invasive species, but high-elevation sites (i.e., Bodie and White Mountains PMUs) where habitat conditions are generally marginal today become more suitable in the future. Therefore, similar to the BSAP, we recognize that cheatgrass impacts today vary across the bi-State region. However, in contrast to the BSAP, we consider future impacts will influence this threat and even the best-case scenario suggests challenges will persist, although the location of these challenges may shift. Conservation efforts that are either currenly under way or planned for in the future can reduce potential cheatgrass impacts in priority areas (e.g., multiple BLM and USFS invasive weed management treatments in multiple PMUs) (Bi-State TAC 2014a, *in litt.*).

(30) Comment: One commenter suggested our estimate of woodland expansion in the bi-State area is an overestimate.

Our Response: We stated in our proposed listing rule that across the bi-State area approximately 40 percent of the historically available sagebrush habitat has been usurped by woodland succession over the past 150 years (USGS 2012, unpublished data). No

additional information was received by the commenter or others since the proposed rule published that would modify our understanding of this threat. Therefore, based on the best available information, we conclude that woodland expansion is a potential threat in the bi-State area as it has reduced habitat availability and negatively influenced population connectivity. As a result, conservation efforts that are currently underway or planned for in the future can reduce potential woodland succession impacts in priority areas (e.g., BLM, USFS, and NRCS treatments of Phase I and II pinyon-juniper encroachment in all six PMUs) (Bi-State TAC 2014a, *in litt.*).

(31) Comment: One commenter expressed concern that listing the bi-State DPS would impact culturally significant resources, specifically referring to pinyon pine seed collection.

Our Response: We recognize that many Native American Tribes consider pinyon pine seed collection to be a culturally significant resource. Under the Act, we are required to use the best available scientific and commercial information to assess the factors affecting a species in order to make a status determination. The Act requires us to consider all threats and impacts that may be responsible for declines as potential listing factors. The evidence presented in the proposed rule suggests that pinyon-juniper forest encroachment is impacting the bi-State DPS and its habitat to a certain degree (see our response to *Comments 30 and 32* above, and the *Native Increasing Plants* section of the Species Report (Service 2015a, pp. 78–84)). Furthermore, we do not believe that it is reasonable (both ecologically and practicably) that all pinyon-juniper woodlands will be

removed from the bi-State area. Ecologists have developed clear recommendations for targeting woodland sites amenable to restoration (based on age class, tree density, soil type, etc.) and in general these locations comprise younger age classes of trees, which do not produce significant seed crops. Although the Act does not allow us the discretion to consider culturally significant resources to inform a listing decision, there does not appear to be a remaining concern given our proposed listing action is being withdrawn.

(32) Comment: Several commenters suggest that fire is the most significant threat to the bi-State DPS and post-fire restoration is difficult. Alternatively, several other commenters suggest that fire is a natural process and does not constitute a complete loss of habitat for the bi-State DPS because sage-grouse will use burned areas.

Our Response: In this document, we address potential habitat changes that may be related to wildland fires and post-fire restoration activities. We agree that fire is a natural process on the landscape within the bi-State area; however, we also note that we found that the "too-little" and "too-much" fire scenarios present challenges for the bi-State DPS. In other words, in some locations, the lack of fire has facilitated the expansion of woodlands, especially into montane shrub communities. In other locations, recent fires have been followed by invasive-weed establishment facilitating a reoccurring fire cycle that restricts sagebrush restoration. These scenarios present challenges for the species, as habitat losses outpace habitat gains. Although fires have occurred across the range of the bi-State DPS historically and recently, we acknowledge that suitable habitat remains for sage-grouse use. However, in some cases, remaining suitable habitat is

threatened by additional fire because of adjacent invasive annual plants and woodland establishment, which can influence the frequency and intensity of future fire events. Further, impacts to remaining sagebrush habitat may be exacerbated due to other additive threats that are acting in the bi-State area (see *Synergistic ImpactsCumulative Effects* section above). To reduce impacts associated with nonnative, invasive plants and woodland succession, conservation efforts are currently underway and planned for in the future (e.g., multiple BLM and USFS invasive weed management treatments in multiple PMUs), (e.g., BLM, USFS, and NRCS treatments of Phase I and II pinyon-juniper encroachment in all six PMUs) (Bi-State TAC 2014a, *in litt.*).

Additionally, while short-term (and potentially long-term) impacts from fire events to sage-grouse are known to occur, including but not limited to habitat loss and population declines (Beck *et al*. 2012, p. 452; Knick *et al*. 2011, p. 233; Wisdom *et al.* 2011, p. 469), we agree that some information suggests sage-grouse use of burned habitat. Small fires may maintain a suitable habitat mosaic by reducing shrub encroachment and encouraging understory growth. However, without available nearby sagebrush cover, the broad utility of these sites is questionable (Woodward 2006, p. 65). For example, Slater (2003, p. 63) reported that sage-grouse using burned areas were rarely found more than 60 m (200 ft) from the edge of the burn and may preferentially use the burned and unburned edge habitat.

In summary, we recognize that fire is natural and the primary disturbance mechanism in the sagebrush ecosystem. We also recognize that sage-grouse will

selectively utilize portions of burned habitat. However, the challenge remains that the sustainability of this system is questionable where habitat loss outpaces habitat gain, especially given the currently limited and fragmented suitable sagebrush habitat in the bi-State area. Therefore, land managers within the range of the bi-State DPS are currently and will continue to implement conservation efforts into the future that are expected to reduce the potential impacts of wildfire as it relates to nonnative, invasive plants and pinyon-juniper encroachment (Bi-State TAC 2014a, *in litt.*).

(33) Comment: One commenter stated that the Benton County landfill will close in 2023. Another commenter stated that there is no guarantee that the landfill will close.

Our Response: We identified the Benton County landfill (located in Long Valley, California) as a potential threat factor to the bi-State DPS because the landfill helps support a significant population of common ravens and *Larus californicus* (California gulls). Common ravens (and possibly California gulls) can potentially affect population growth in sage-grouse by negatively impacting nesting and brood-rearing success (Coates *et al.* 2008, pp. 425–426). While predation has not been studied explicitly, data do demonstrate that nest success in Long Valley (South Mono PMU) is significantly lower as compared to other sage-grouse populations within the bi-State area (Kolada *et al.* 2009a, p. 1,344) and this result may be attributable to an increased number of sage-grouse predators (i.e., ravens and gulls) subsidized by landfill operations (Casazza 2008, pers. comm.).

The Benton County landfill is located on private property owned by the LADWP and leased by Mono County, California. The lease is set to expire in 2023 and both the LADWP and Mono County state the lease will not be renewed (Weiche 2013, pers. comm.; Johnston 2014, *in litt*.).

(34) Comment: One commenter stated that impacts to the bi-State DPS caused by cellular towers can be mitigated by installing anti-perching devices to prevent perching by avian predators.

Our Response: We identified cellular towers as an impact to the bi-State DPS and its habitat because the presence of this form of infrastructure has been shown to be correlated with extirpated range (Wisdom *et al*. 2011, p. 463). Furthermore, distance to cellular towers appeared to be a highly discriminatory variable explaining extirpation. The mechanism by which this feature may lead to sage-grouse extirpation has not been studied. Thus, whether cellular towers function in a cause and effect manner (such as facilitating predation) or simply are aligned with other detrimental factors (such as being an indicator of intense human development) is not known.

The Service acknowledges that installation of anti-perching devices on tall structures (such as cellular towers) may influence predation rates. However, the efficacy of this practice to discourage raptor and corvid perching is debatable (Prather and Messmer 2010, p. 798), and increased predation may not be the mechanism leading to extirpation. Thus, while we generally agree that perch deterrents may ameliorate any

increased predation impacts caused by cellular towers on sage-grouse, available data do not support the idea that these devices (currently) can eliminate the threat entirely. We will continue to work with landowners and partners to remove or reduce impacts from existing or potential future cellular towers, especially in proximity to breeding, nesting, and brood-rearing habitats.

(35) Comment: Several commenters suggested that climate change poses a significant impact to the bi-State DPS and its habitat, including one commenter that stated we underestimated the impact that climate change may have on the DPS.

Our Response: In this document under Factors A and E, we address potential impacts associated with climate change. We found that projected climate change and its associated consequences have the potential to affect sage-grouse, and sagebrush habitat in the bi-State area. The impacts of climate change interact with other stressors such as disease, invasive species, prey availability, moisture, vegetation community dynamics, disturbance regimes, and other habitat degradations and loss that are already affecting the species (Global Climate Change Impacts in the United States 2009, p. 81; Miller *et al*. 2011, pp. 174–179; Walker and Naugle 2011, entire; Finch 2012, pp. 60, 80). We concluded that without consideration of conservation actions, the overall impact of climate change to the bi-State DPS at this time is moderate. Neither the commenters nor others provided new information related to climate change that would result in a change in our analysis. However, since the publication of the proposed rule, ongoing implementation of various conservation measures in the BSAP has reduced the

significance of the threat of wildfire and invasive plants, which could work synergistically with climate to impact sage grouse. Continued implementation of the BSAP further reduces the impacts of these threats to the bi-State sage-grouse. Therefore, even should climate change increase the threat of wildfire and invasive plants to some degree, we no longer conclude that climate change acting in concert with these other threats constitutes a significant threat to the bi-State DPS. See the *Climate* section of the Species Report for further discussion (Service 2015a, pp. 91–99).

(36) Comment: One commenter stated that the proposed listing rule violates Executive Order 13563, as the Service fails to identify a recovery goal.

Our Response: We disagree that Executive Order 13563 (76 FR 3821) should be interpreted to require the Service to identify a recovery goal when proposing a listing rule under the ESA. The ESA requires the Service to create recovery plans for all listed species that contain objective, measurable criteria that, when met, would lead to removal of the species from the list. These recovery plans are created following a final determination to list a species as threatened or endangered. In this case, we are withdrawing our proposal to list the bi-state DPS of greater sage-grouse.

(37) Comment: Several commenters stated that the court-mandated timeline for making a final listing determination is too short and does not allow adequate time to determine if conservation efforts, such as those identified in the 2012 BSAP, are sufficient to maintain a viable sage-grouse population in the bi-State area.

Our Response: In 2011, we reached, and the court accepted, a stipulated settlement agreement with several plaintiffs in *Endangered Species Act Section 4 Deadline Litig*., Misc. Action No. 10–377 (EGS), Multi-District Litigation (MDL) Docket No. 2165 (D. DC) (known as the "MDL case"). This settlement established a multiyear workplan, whereby we committed to publish proposed rules or not-warranted findings on 251 species designated as candidates as of 2010 no later than September 30, 2016. Our time line associated with the bi-State DPS reflects this workplan.

(38) Comment: Several commenters stated that we should have proposed listing the bi-State DPS of greater sage-grouse as an endangered species as opposed to a threatened species.

Our Response: Section 3 of the Act defines an endangered species as any species that is in danger of extinction throughout all or a significant portion of its range, and a threatened species as any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Endangered species are at the brink of extinction today, while threatened species are likely to be at the brink in the foreseeable future if their status does not improve or at least stabilize.

With regard to the bi-State DPS, we have identified potential threats across the range of the bi-State DPS that are synergistically resulting in the present or threatened destruction, modification, or curtailment of its habitat or range, and other natural or

manmade threats affecting the DPS's continued existence. We have determined that, in the absence of any conservation efforts, these impacts are such that the DPS is likely to become an endangered species within the foreseeable future (i.e., the definition of a threatened species). Many of these impacts could act cumulatively upon the bi-State DPS and increase the risk of extinction, but not to such a degree that the DPS is in danger of extinction today (see **Determination**, above). However, after consideration of partially completed projects and future conservation efforts that we have found to be highly certain to be implemented and effective (see **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)** section, above), we believe the bi-State DPS is not in danger of becoming extinct throughout all or a significant portion of its range, and is not likely to become endangered within the foreseeable future (threatened), throughout all or a significant portion of its range. Therefore, the bi-State DPS of greater sage-grouse does not meet the definition of a threatened or endangered species, and we are withdrawing the proposed rule to list the DPS as a threatened species.

(39) Comment: Several commenters suggested that the decline of the bi-State DPS is a natural evolutionary process, and that the presence of environmental stressors is a normal driver of evolution and extinction.

Our Response: Under the Act, we are required to use the best available scientific and commercial information to assess the factors affecting a species in order to make a status determination. The Act requires the Service to consider all threats and impacts that may be responsible for declines as potential listing factors. The evidence presented

suggests that the threats to the species are both natural and manmade (see impacts associated with Factor E, including (but not limited to) infrastructure, wildfire, small population size, urbanization, and recreation).

(40) Comment: A few commenters were concerned about the effects of listing on mining and associated activities conducted under the General Mining Law of 1872. One commenter suggested that listing did not take into consideration Federal mining law and recognition of valid existing rights. Another commenter was concerned that there would be no assurances that development of a mining claim will result in the ability to mine it.

Our Response: In the proposed listing rule, we identified mining and associated activities to be a threat to the bi-State DPS; however, we consider it a less significant impact and one that does not occur across the entire bi-State area. On federally managed land outside of designated wilderness, new mining may occur pursuant to the Mining Law of 1872 (30 U.S.C. 21 et seq.), which was enacted to promote exploration and development of domestic mineral resources, as well as the settlement of the western United States. It permits U.S. citizens and businesses to prospect hardrock (locatable) minerals and, if a valuable deposit is found, file a claim giving them the right to use the land for mining activities and sell the minerals extracted. Gold and other minerals are frequently mined as locatable minerals, and, as such, mining is subject to the Mining Law of 1872. Authorization of mining under the Mining Law of 1872 is a discretionary agency action pursuant to section 7 of the Act. Therefore, Federal agencies with jurisdiction over land where mining occurs will review mining and other actions that they

fund, authorize, or carry out to determine if listed species may be affected in accordance with section 7 of the Act. Because we have withdrawn our proposed rule to list the bi-State DPS and it will not be placed on the list of federally endangered or threatened species, consultations under section 7 of the Act will not be required specific to the bi-State DPS.

(41) Comment: Several commenters stated that conservation efforts to date have not been adequate to address known threats.

Our Response: While considerable effort has been expended over the past several years to address some of the known threats throughout portions or all of the bi-State DPS's estimated occupied range, without implementation of conservation actions, threats to the continued viability of the DPS into the future would remain. The development of the 2012 BSAP (Bi-State TAC 2012a, entire) has highlighted the importance of not only habitat restoration and enhancement but also the role of the States and other partners in reducing many of the known threats to the bi-State DPS. Cooperative, committed efforts by Federal and State agencies, as well as Mono County will result in full implementation of the BSAP, including funding and staffing commitments over the next 10 years to address the most significant impacts to the DPS and its habitat (BLM 2014c, *in litt.*; CDFW 2014b, *in litt.*; Mono County 2014, *in litt.*; NDOW 2014b, *in litt.*; USDA 2014, *in litt.*; USGS 2014c, *in litt.*). Such plans provide the ongoing, targeted implementation of effective conservation actions that are essential for the conservation of the bi-State DPS and its habitat into the future. We discuss the various conservation efforts that are

currently ongoing and planned for in the future within the estimated occupied range of the bi-State DPS of greater sage-grouse in more detail in the **Ongoing and Future Conservation Efforts** section and the **Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)**) sections of this document.

(42) Comment: Numerous commenters questioned our conclusion that sage-grouse populations in the bi-State area have declined. Further, several commenters stated that listing is not warranted because recent data suggest stable to increasing population trends.

Our Response: Our analysis in the proposed rule and presented in this document was based upon the best available scientific and commercial information, and constitutes our final determination, in accordance with section 4(b)(6)(A) of the Act. Based on our analysis of the five factors identified in section 4(a)(1) of the Act, and as explained further in the published finding, we have concluded that population declines have been on par with reductions in sagebrush extent (see our response to *Comment 3* above).

Further, as discussed above (see our response to *Comment 7*), we determined in the *Species Information* section of the proposed rule and *Bi-State DPS Population Trends* section of the Species Report that declining population trends were apparent in the Pine Nut, Desert Creek–Fales, and Mount Grant PMUs. Further, we concluded that the South Mono and Bodie PMUs appeared stable and the population trend in the White Mountains PMU was unknown. In this final analysis and the *Bi-State DPS Population Trends*

section of the updated Species Report, we describe new information received related to populations and trends. In summary, these new data estimate that population growth has been stable across the bi-State area between 2003 and 2012 (Coates *et al*. 2014, entire). Specifically, estimated population growth was positive for four of the six populations analyzed (Pine Nut, Desert Creek, Bodie Hills, Long Valley) and negative for the remaining two populations analyzed (Fales, Parker Meadows) over this time period. A population trend assessment was not conducted for the Mount Grant and White Mountains PMUs due to lack of data.

Based on our analysis of the five factors identified in section 4(a)(1) of the Act, and after consideration of partially completed and future conservation efforts that we have found to be certain of implementation and effectiveness (as described in our detailed PECE analysis available at *www.regulations.gov*, Docket No. FWS–R8–ES–2013–0072), we believe the bi-State DPS is not likely to become endangered within the foreseeable future (threatened).

(43) Comment: Numerous commenters suggested that our grazing and rangeland management assessment in the proposed rule is not accurate and requires additional clarification. Specifically, they suggested that: (1) Current livestock grazing is compatible with sage-grouse conservation in the bi-State area, (2) a more clearly defined delineation is needed between past and present grazing impacts, and (3) additional delineation is needed among grazing animals (i.e., cattle, horses, sheep, insects, etc.). Alternatively, several other commenters suggested that grazing and rangeland

management are a significant threat to the bi-State DPS's conservation, and this threat is not adequately controlled by existing management programs.

Our Response: In this document we present a summary of the *Grazing and Rangeland Management* section of the Species Report (Service 2015a, pp. 71–77), in which we found that the majority of allotments in the bi-State area are not significantly impacted by livestock grazing. Specifically, Rangeland Health Assessments (RHAs) or their equivalents (i.e., the standard used by Federal agencies to assess habitat condition) have been completed on allotments covering approximately 81 percent of suitable sage-grouse habitat in the bi-State area. Of the allotments with RHAs completed, 81 percent (n=97) are meeting upland vegetation standards, suggesting that approximately 352,249 ha (870,427 ac) out of approximately 563,941 ha (1,393,529 ac) of suitable sage-grouse habitat are known to be in a condition compatible with sagebrush community maintenance. Furthermore, of the allotments with RHA completed, 45 percent are meeting riparian standards and 27 percent are not, with the remainder being unknown or the allotment does not contain riparian habitat. Of those not meeting riparian standards, approximately 15 percent, livestock were a significant or partially significant cause for the allotment failing to meet identified standards while the remainders were attributed to other causes such as past mining activity or road presence. In each instance (upland or riparian) of an allotment not meeting standards due to livestock, remedial actions have been taken by the representative land managing agency (such as changes in intensity, duration, or season of use by livestock). Therefore, we concluded that modern livestock grazing is not a significant impact on sage-grouse habitat.

Furthermore, we note that historical impacts from livestock grazing and impacts caused by feral horses are apparent, but data to assess these impacts are largely limited. None of the commenters provided additional data to assist with this assessment. In total, we believe that historical impacts (past grazing and other land uses) and impacts from feral horse use is apparent in local areas, but we consider current management to be sufficient to address these issues.

(44) Comment: Several commenters suggested that existing regulatory mechanisms are insufficient to affect conservation of the bi-State DPS. Alternatively, several other commenters suggested that existing regulatory mechanisms are adequate.

Our Response: Under the Act, we determine that a species is endangered or threatened based on our analysis of the five listing factors, which includes the inadequacy of existing regulatory mechanisms. For the bi-State DPS, we must evaluate the adequacy of existing regulatory mechanisms from the baseline of the DPS not being federally listed under the Act.

In the proposed listing rule, we concluded that most existing regulatory mechanisms are sufficiently vague as to offer limited certainty as to managerial direction pertaining to sage-grouse conservation, particularly as they relate to addressing the threats that are significantly impacting the bi-State DPS (i.e., nonnative, invasive and certain native plants; wildfire and altered wildfire regime; infrastructure; and rangeland

management). However, we note one exception: our support for the BLM Bishop Field Office's 1993 RMP, which precludes any discretionary action that may adversely affect sage-grouse or sage-grouse habitat (BLM 1993, p. 18). Furthermore, we recognize that some County policies and ordinances while not precluding development have, at times, limited development (Service 2015a, pp. 129–130); thus, these efforts also need to be recognized.

Since that proposal, we have fully evaluated the BSAP and determined that it ameolirates threats to the species, lessening the need for regulatory mechanisms to manage stressors. The currently proposed BLM and Forest Service Land Use Plan amendments will provide additional specificity and certainty that compliment the BSAP conservation of the bi-State DPS and its habitat. We mention the draft plans in this document to recognize that the BLM and the USFS have taken steps to draft such plans, which will make their language consistent with the actions being undertaken in the BSAP. However, we are not relying on them as part of this review because they are not finalized and would require speculation on the Service's part as to the final outcomes of the plans. Since we have determined that the ongoing and future conservation efforts under the BSAP are removing the threats to the bi-State DPS as discussed above, we find that the currently existing regulatory mecanisms are adequate.

(45) Comment: Two commenters suggested that our conclusion in the proposed rule about the potential impacts to the bi-State DPS caused by transmission lines is

incorrect. Additionally, other commenters disagree with our conclusion that the number of transmission lines may increase.

Our Response: In the *Infrastructure* section of this document and the *Power Lines* section of the Species Report (Service 2015a, pp. 56–60), we address potential impacts associated with transmission lines. We found that a variety of power lines (transmission and distribution) currently occur throughout the range of the bi-State DPS. While we recognize that the potential impact caused by power line presence remains debatable in the scientific community (Johnson *et al*. 2011, p. 440; Wisdom *et al*. 2011, p. 463; Messmer *et al*. 2013, entire), the best available information infers that power line presence negatively impacts sage-grouse. Since the proposed rule published, we received additional information on transmission lines that further supports our conclusion (Gibson *et al*. 2013, p. 23; Gillan *et al*. 2013, p. 307). Therefore, we maintain that power line presence negatively affects the DPS.

Also, in our proposed rule, we stated that "infrastructure features are likely to increase (secondary roads, power lines, fencing, and communication towers)." While this forecast remains uncertain, it is logical that power line development will occur to some unknown degree in light of potential future energy, mineral, and housing development in the bi-State area. As a result, land managers implement conservation efforts that reduce potential infrastructure-related impacts, including (but not limited to) reducing human disturbance, development, and associated infrastructure (e.g., power lines) in Mono County (e.g., Mono County 2014, *in litt.*), or in some cases removing power lines in

critical sage-grouse areas (e.g., the BLM's removal of the Bodie-sub to Fletcher-sub power line in the Bodie PMU) (Bi-State TAC 2014a, *in litt.*)

(46) Comment: Several commenters stated that they believe mining is not a threat to the bi-State DPS. Alternatively, another commenter suggested impacts from mining are significant.

Our Response: In the *Mining* section of this document, we address potential impacts associated with mining activities. We found that sage-grouse could be impacted directly or indirectly from an increase in human presence, land use practices, ground shock, noise, dust, reduced air quality, degradation of water quality and quantity, and changes in vegetation and topography (Moore and Mills 1977, entire; Brown and Clayton 2004, p. 2) (Factor E). However, we recognize that while theoretical effects are clear and logical, information relating sage-grouse response to mineral developments is not extensive. Neither the commenters nor others provided new information related to this threat. While we maintain that it is reasonable to assume a negative impact from mining on sage-grouse, based on the current extent and location of mineral developments in the bi-State area we conclude that by itself, mining is not considered a significant impact at this time. However, mining is a potential concern for the future based on the potential for mining activities to impact important lek complexes and population connectivity, and the likely synergistic effects occurring when this threat is combined with other threats acting on the bi-State DPS currently and in the future. See the *Mining* section of the Species

Report for a complete discussion of the potential effects of mining activities on the bi-State DPS and its habitat (Service 2015a, pp. 65–68).

References Cited

A complete list of all references cited in this document is available on the Internet at *http://www.regulations.gov* at Docket No. FWS–-R8–-ES–2013–0072 or upon request from the Field Supervisor, Reno Fish and Wildlife Office (see **ADDRESSES** section).

Authors

The primary authors of this document are the staff members of the Pacific Southwest Regional Office and Reno Fish and Wildlife Office (see **ADDRESSES**).

Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: April 13, 2015

Signed: Daniel M. Ashe

Director, U.S. Fish and Wildlife Service.

Billing Code 4310-55

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